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venditur pro Opobalfamo in Capsulis, quae cortices Nucum sunt, ex Balfamo Lenuino, Burac
orace Capsetur videtur; Vid. Pomel. History of Drugs.

Natural vegetable Productions

Used in MEDICINE.

CLASS the FIRST.

LIQUID RESINS.

THE Bodies of this Class, though of great Value in Medicine, are only seven in number.

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|--------------------|-------------------|
| 1. BALM of GILEAD. | 5. TURPENTINE. |
| 2. BALSAM of PERU. | 6. LIQUID AMBAR. |
| 3. BALSAM of TOLU. | 7. LIQUID STORAX. |
| 4. BALSAM CAPIVI. | |

CHAPTER I.

BALSAMUM JUDAICUM,
Balm of Gilead.

THE true *Balsamum Judaicum*, or as we more frequently call it, *Balm of Gilead*, is a thin and transparent resinous Juice: It is of a pale yellowish Colour, between what we call Straw Colour and that of Lemon-Peel; it sometimes however varies from this, and is either deeper, or almost entirely white; its Consistence is yet less stable or fix'd than its Colour; it is, when fresh drawn from the Tree, very little thicker than common Oil, but it by Degrees grows more and more thick in keeping; it is of a tough and viscous Nature like Turpentine, and is of an extremely fragrant Smell, with an Admixture of somewhat of the Citron Flavour in it; its Taste is acrid and bitterish, but very agreeable. It is always best when thinnest, provided it be genuine; for as it acquires a thicker Consistence by keeping, it generally loses its Fragrance and Virtue in proportion.

It is therefore to be chosen fluid as Oil, of a very pale yellow Colour, perfectly transparent, and of a fragrant Smell, with somewhat of the Lemon or Citron Flavour, but not too much of it; for the Druggists, who know this sort of Flavour is expected in it, and who can easily give it to any Sophistication they sell under its Name, by a few Drops of Essence of Lemons, often make their Counterfeits discover themselves by too much of this Smell.

The Balsam of *Judea* has been long known in Medicine, the old *Greeks* speak of it under the Name of *Opobalsamum*, and all the after Writers under those of *Balsamum Syriacum*, *e Mecha*, *Constantinopolitanum*, *Judaicum*, *Gileadense*, and *Balsamelæon*.

The Shrub which produces it is described by Authors under the Name of *Balsamum verum* and *Balsamum Syriacum Rutæ folio*, the Rue leaved Syrian Balsam Tree. It grows to five or six Feet high. Its Leaves are resembled to those of Rue by Authors, but they are rather like those of the Lentisk Tree; they are of the pinnated Kind, three or four Pairs of little roundish Leaves growing to a middle Rib, with an odd Leaf at the End. These Leaves remain green all the Winter: The Twigs or small Branches of the Shrub are tough like those of the Willow, and when broken are of a very fragrant Smell. The Bark of the whole Shrub also is scented, but the Wood of the larger Branches is white and has no Smell. The Flowers resemble those of the *Acacia*, and are of a purplish white, and extremely fragrant. The Seeds are yellow and small, and are inclosed in blackish membranaceous Capsules, and are very sweet scented, and of an acrid and bitterish Taste.

The ancients supposed *Judæa* to be the native Place of the Balsam Shrub: *Theophrastus*, *Dioscorides*, and *Pliny* all join in affirming it. *Theophrastus* indeed is of Opinion that it was not wild there, nor indeed in any other known Part of the World, but that it was cultivated for the Sake of its Balsam. *Dioscorides* on the other Hand tells us, that it grew wild not only in *Judæa*, but in *Ægypt* also; and *Strabo* speaks of it as wild in *Arabia*. At present it is not found in any of the Places Authors mention; but is only cultivated in some Gardens by the *Turks*, particularly about *Cairo*, where they are at great Expence about it. They all agree that it was brought originally from *Arabia*; and indeed the most authentic Accounts we have, all join in fixing *Arabia Felix* as its true native Soil.

Prosper Alpinus, who had seen the *Balsam Judaicum* on the Spot, tells us that it is, when first drawn from the Shrub, of a whitish Colour, and of an extremely fragrant and penetrating Smell, somewhat resembling the Turpentine Odour, but without its disagreeable Part, and that its Taste is acrid, bitter, and astringent. He adds, that it is at that Time turbid like Oil newly pressed from the Olives; but that after a little standing it becomes perfectly transparent and fine, and very thin and light; that its Colour from the original white, first becomes greenish, and afterwards a yellowish or straw Colour. This is the State in which we ought to receive it for medicinal Use; after this it becomes as thick as Turpentine, and loses the greater Part of its Smell and of its Virtues. The Ancients knew but of one Way of obtaining the Balsam from the Shrub, which was by wounding the Bark, and receiving it as it ran from the Wounds; this Way they obtained a very fine Balsam, but they could have it only in very small Quantity. At present there are three Ways of obtaining it, and according to these, there are three Kinds of the Balsam. The first Kind is that obtained from the natural Cracks, or from Wounds made in the Bark, as by the Ancients; this is the best and most precious Kind. But there is so little procured this Way, that it scarce supplies the Seraglio and the great Officers, and hardly a Drop of it is ever sent out of the Country. The second Kind is called by some, the *Constantinople* Balsam; this also rarely comes to us, unless in small Quantities presented by the great Men of the Porte: This is prepared by boiling. They fill large Vessels with the young Twigs, and Leaves of the Balsam Shrub, and adding a large Quantity of Water, they boil them gently. During the boiling, there rises to the Surface of the Liquor, an oily and

Balsamum arbuscula est ad Altitudinem Cytis, folia paucā gerens Ruta similis, perpetuo
viventia, vel etiam Lentis foliorum emula sunt; Ramuli sunt odorati, gummosi, digiti
contractati iis tenaciter adherent, flores sunt parvos, albos, acaciae similes summae odorati
a quibus semina promanant flava, folliculis nigris subrufescentibus contenta, valde
odorata, interque humorem flavum mellis persimilem habentia... sapore suo amaro parum
aeri linguam ferientia, Opobalsamumq. redolentia. Fructus vero Terbinthi Figuram
ac Magnitudinem emulantur Prosper Alpini. de Plant. Egypt.

Josephus tells us that the Jews had a Tradition of it was first brought into their Country
by the Queen of Sheba, who presented it to Solomon -

Notabile est, inquit Hoffman (in Dissertatione de Balsamicis Medicamentis) Arberem hanc non
Indae indigenam esse, sed inquilinam; Quum multae Plantae in Moechia Arabica
felices oppido, in Palaestram, & hinc Cleopatrae & Antonij Tempore in Aegyptum
Translatae sint.

It is used wth Success in y^e Colica Pictorum, or y^e Disease brought on by working in Lead

and balsamic Matter, which they scum off and preserve for Use. After all this fine Matter is raised, they encrease the Fire, and a larger Quantity of a somewhat thicker Balsam rises, more like Turpentine; this they also separate, and preserve by itself; and this is principally what is brought over into *Europe*.

The *Balsamum Judaicum*, distilled by the Retort, yields a large Portion of a fine light and fragrant essential Oil, leaving behind it in the Retort a Cake of Matter like Resin. If the Fire is continued there arises afterwards a thick reddish and stinking Oil as from Turpentine, and a few Drops of an acid Spirit.

The *Balsamum Judaicum* is a great Cordial, Restorative, and Provocative, according to the Testimony of Authors; and we have many who are continually taking it with that Intent. It is also recommended by many against malignant Fevers and the Bites of venomous Animals. The People of *Ægypt* look on it as a Kind of universal Remedy; they give it in all Diseases of whatever Kind, the Plague itself not excepted; and they tell us of many cured of that terrible Distemper by it.

It is unquestionably a very noble Detergent and Balsamic: It is of the same Use with *Capivi* in Gonorrhœas, and is excellent in Ulcers of the Kidneys and Bladder. It is by some esteemed a Cure for Consumptions, and though it deserve not absolutely that Title, yet with proper Management it may do great Service in them. Externally it has been at all Times deservedly famous for curing Wounds of all Kinds: Where the Wound is indeed a simple Solution of Continuity, and there is no Bruise with it, the Cure with Balsams of this Kind is very sudden.

For internal Use it may be either given in Bolusses, or dropped on Sugar, or finally dissolved by Means of the Yolk of an Egg into Emulsions. The *Turkish* Women use the Balsam of *Gilead* as a Cosmetic: They are made hot in the Baths, and then rubbed over with it several Times; after which it is in fine taken off by Means of Oil of Almonds and a careful Washing. They often stay however twenty or thirty Days from the first anointing, before they clear it off; and they are of Opinion that their Skins become much less apt to wrinkle after this. We sometimes also order it as a Cosmetic: But with us it is made into a Kind of *Lac Virginis*, by mixing the Balsam with Spirit of Wine, by means of Oil of sweet Almonds, which is afterwards to be separated by Subsidence, and a Spoonful of this impregnated Spirit, then mixed with four Ounces of Water renders it milky.

CHAPTER II.

BALSAMUM PERUVIANUM, *Balsam of Peru.*

THE common Balsam of *Peru* is a thick and tough Liquor, resembling a thin Turpentine in Consistence, but somewhat less viscous; resinous, and inflammable, of a dark dusky purplish green Colour, approaching to black, insomuch that it is called black Balsam of *Peru*. It is not pellucid except when drawn out into fine Threads. Its Smell is extremely fragrant, somewhat resembling that of *Benjamin* and the Balsam of *Tolu* mixt. Its Taste is very acrid and pungent, but highly aromatic and agreeable. It Smell while burning is also very agreeable. It

It is to be chosen of a moderate Consistence, not too thick, and not too deep or black in Colour; such also as has an empyreumatic Smell is to be rejected. It is brought to us from the Place whose Name it bears, and from some other Parts of *South America*.

The Tree which produces it is described by *Marcgrave* under the Name of *Cabui Iba*, and by *Piso* under that of *Cabureiba sive Balsamum Peruvianum*, and by *Hernandez* under that of *Hoitziloxitl seu Arbor Balsami Indici Balsamifera prima*. It grows to seven or eight Feet high in Form of a Shrub, much branched from the Bottom; its Leaves resemble those of the Almond Tree, but that they are broader and more pointed. The Flowers stand on the Summit of the Branches, they are yellow, and are succeeded by crooked Seeds.

The black *Peruvian* Balsam is obtained from this Tree by boiling in the same Manner as the ordinary Balm of *Gilead* is from its Shrub. They cut the Branches, Leaves, &c. into small Fragments, and throw them into a large Vessel of Water, in which they boil them several Hours. They then let all cool, and the next Day they skim off with a Spoon a fatty Liquor which floats on the Surface of the Decoction. This they preserve and send into *Europe*, under the Name of Balsam of *Peru*.

The Virtues of this Balsam as a Cordial, a Pectoral, and a Diuretic are very great. It is given with Success from four to eight Drops for a Dose in Consumptions, Asthmas, nephritic Complaints, and in Obstructions of the *Viscera*, and Suppressions of the Menfes. It has also, externally used, all the Virtues of the Balm of *Gilead*, and consolidates Wounds in the same remarkable Manner. It is best taken dropped on Sugar; the Yolk of an Egg will indeed dissolve it, and it may be that Way made into an Emulsion, but it is more acrid in that Form than when taken singly. It is often made an Ingredient in Bolusses and Electuaries and is in some of the officinal Compositions.

BALSAMUM PERUVIANUM ALBUM,

White Balsam of Peru.

The white Balsam of *Peru*, a Drug whose Virtues make it a Misfortune to us that it is not more common in the Shops, is a Liquid of a white Colour, the most of all Things, in its external Appearance, approaches to the Balm of *Gilead*; but is easily distinguished from it by its Smell: It also wants that Cast of yellow which the genuine Balm of *Gilead* has. It is a little more fluid than *Venice* Turpentine, but somewhat less so than the black Balsam of the same Name. It is very tough and viscous to the Touch, of a pale white Colour, sometimes with a faint Kind of Yellowness in it, very clear and pellucid, and extremely inflammable, yielding a very fragrant Scent while burning. It is of a very pleasant brisk Scent, more resembling that of Storax than of any other known Substance. It is acrid, pungent and bitterish to the Taste, and leaves a remarkably agreeable Flavour for a long Time in the Mouth. It is brought to us from the same Places with the black Balsam of the same Name, and is the Produce of the same Tree; but as the other is procured by boiling, this white Kind flows from the Trunk and Branches of the Shrub when wounded in the hotter Months. This is therefore much more scarce even on the Spot, and consequently would be much dearer if commonly imported to us; but its superior Virtues would make Amends for the Difference. *Herman*, who had experimented upon this scarce and valuable Drug, tells us, that

Dolendum est hoc Balfamum nostris temporibus, ad mentem Myrac Liquidam, aut forsan facibus quae a foetione

Balsami Peruviani remanent, odio adulterarij, ut Genuinum vix amplius in officinis reperiat.

Hoffman. De Medicamentis Balsamicis. p. 49. Lij. Vol. iv. Fol. Edit.

When Genuine is entirely dissolved in Sp. of Wine.

Mixt. foveat & recreat fractos Urines, & nervoso generi est Amicissimus. Hoffman. ibid.

Colorem pro se fert aureum, odorem Spirat-Limonis similem praeertim in Ula Manus instituta.
Hoffman. de Medicamentis Balsamicis Pag. 49. l 4.

that on Distillation in a Retort, it yields a fine, thin, and fragrant Oil, which almost immediately concretes into a solid Substance like Camphire, of a fine white Colour and pungent agreeable Smell. This has all the Virtues of the Balsam itself given in a smaller Dose. The Balsam used in its natural State is said to possess the Virtues of the Balm of *Gilead*, and to be no Way inferior to that precious Drug. The *Indians* take it for all Diseases of the Breast, and it is their grand Remedy externally used for Wounds.

C H A P T E R III.

BALSAMUM TOLUTANUM,
Balsam of Tolu.

BALSAM of *Tolu* is a Resin that scarce allows itself in the Condition in which we see it to be of the fluid Kind. It runs very thin for some time after it is collected, however by Degrees it grows more and more thick, till after some Years keeping it becomes almost solid. The Consistence we usually see it of, is that of very thick Honey, which will just alter its Form on moving the Vessel it is kept in: It is very tough and viscous, and in Colour is of a ruddy brown with an Admixture of yellow, which discovers itself much the most plainly when the Balsam is drawn into Threads. Its Smell is very fragrant. It seems to carry a mixed Resemblance of Benjamin, Storax, and Balm of *Gilead*, for there is evidently somewhat even of the fine Citron Flavour of the last in it. It is somewhat acrid to the Taste, but upon the whole sweetish, aromatic, and very pleasant. It is brought from the Province of *Honduras* in new *Spain*. The *Indians* call this Part of the Country *Tolu*, and thence the Name originally given to the Drug which it yet retains.

They put it up in Calabashes or Shells of small Gourds, and we receive it in them. It is to be chosen fresh, which may be known by its Consistence, for such as is dry solid, and friable, has always been kept too long; it should be at least capable of receiving an Impression from the Finger, and of a very fragrant Smell, and such as does not break in the Mouth, but forms itself into a tough Paste like Mastich between the Teeth.

The Tree which produces the Balsam of *Tolu* is one of the *Arbores fructu a flore remoto coniferæ* of Ray. It is described by *Hernandez* but imperfectly under the Name of *Balsamifera Quarta*. All we at present know of it is, that it is a low Tree resembling the common Pine, that is very much branched, and has oblong and narrow Leaves which are green all the Winter. The *Indians* cut and wound the Bark of the Trunk and Branches of this Tree in the hottest Seasons, and collect the Balsam that flows during the Heat of the Day, from the Wounds, with small Spoons, from which they empty it into those Shells we see it in.

The Virtues of the Balsam of *Tolu* are the same in general with those of the *Peruvian* and *Gilead* Kinds; but it is less acrid, and therefore is preferred by many to both of them. It is given in Consumptions and other Disorders of the Breast, sometimes in Form of Pills, sometimes of Electuary; but as it has not the Pungency of the other Kinds, the best Form of giving it is in
Emulsion

Emulsion dissolved with the Yolk of an Egg, and so mixed with Water. The Syrup called *Syrupus Balsamicus* in the Shops is made of this Balsam boiled in Water in a close Vessel, and the Decoction thickened into a Syrup with fine Sugar.

CHAPTER IV.

BALSAMUM CAPIVI,

Balsam Capivi.

WE are obliged to the new World for most of the liquid Refins which we have brought into Use in Medicine. This called Capivi is in its common State the thinnest of all the Bodies of this Class, having little more than the Consistence of Sallad Oil, and much resembling it in its pale yellow Colour. It does not always however retain this thin Form, but like the rest of the liquid Refins grows thicker with keeping. Its Smell is very fragrant and agreeable; there is much of the Turpentine Flavour indeed in it, but there is a Mixture of Fragrancy not unlike that of the *Lignum Aloes*, which makes it very pleasing: Its Taste is extremely acrid, pungent, and bitter. It is to be observed however, that we have two Kinds of Balsam Capivi in the Shops, the one what has been just described, which though naturally thin as Oil, yet will grow thick as Honey in keeping, but still distinguishes itself by its Clearness and its yellow Colour. The other we seldom meet with otherwise than very thick; it is white, turbid, or less pellucid than the former, and seems rather of the Consistence of Honey than of Turpentine. Its Taste however is very like that of Turpentine, and its Smell much less agreeable than that of the preceding Kind. In keeping of this Kind we often see a small Quantity of Water separated from it, and subside to the Bottom of the Vessel. It is probable that this is not the natural Running of the Capivi Tree, as the former is, but is procured from it by the *Indians* by boiling as they get the black Balsam of *Peru*.

The *Portuguese* were the first who made us acquainted with this Balsam; They brought it from the *Brazils*, whence the greatest Part of what we have at this Time also comes, and called it *Balsamum Brasiliense*, and *Balsamum Copaiba*, *Copaiva*, *Copaic*, and *Capivi*; all which Names it yet retains with that of *Oleum Capivi* by some, because of its Fluidity.

The Tree which produces it is one of *Arbores filiquosæ flore uniformi* of Mr. Ray. It is described by *Piso* and *Marcgrave* under the Name of *Copaiba*, and by Ray in his History of Plants, under that of *Arbor balsamifera Brasiliensis fructu monospermo*. It is a large and tall Tree. Its Wood is as sound and firm as that of the Beach, and is of a fine red Colour; it is much branched; its Leaves are roundish, but pointed at the End, of a deep green on the upper Side, and of a whitish green underneath. The Flowers are of the pentapetalous Kind, and moderately large, they grow principally about the Extremities of the Branches, and are succeeded by Pods of an oblong Figure, containing each only one Seed, which is of the Size and Shape of a Hazel Nut, consisting of a whitish pulpy Matter covered with a blackish Rind. These Seeds are esculent, and the Monkeys are observed to be very fond of them. The Tree
grows

on mixing it with the Watery Spirit of Sel. Ammoniac made with quicklime
a frothing or Effervescence ensues, stronger & of longer Continuance than that
produced by the same Spirit with any other Natural Balsam. Neuman. 285.

Duplez nobis Appertetur, quale n. n. est liquor limpidus, odoris fragrantis, saporis acridi; Alterum vero Cras-
simum hoc pendet ex diverso colligendi Tempore. Illud enim statim ex arboris incisione affluit, hoc postea per
Hoffman. de Medicam. Balsam. p. 49. § vj.

The Balm of Copernicus was till lately esteemed an uneasy medicament in the Cure of Gonorrhoeas after the Venereal virus is destroyed by the proper Specifics; but it is now suspected by many Judicious persons as well from its Nature as Observations on its effects, to aggravate rather than mitigate this often troublesome Symptom

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grows in the Forests of the *Braſils*, and in ſome of thoſe of the *Antilles* Iſlands. They cut deep into it in the Heats of Summer, and it bleeds ſo freely of this refinous Juice, that twelve Pounds of it may ſometimes be collected from one Wound properly made in the Space of three or four Hours. The Baſam that runs firſt is thinneſt, and is preſerved apart as moſt valuable.

Baſam of Capiwi, diſtilled in an Alembic, with a large Quantity of Water, yields an Oil like that of Turpentine, but more fragrant, and a Water highly ſcented with the Baſam, and taſting ſtrongly of it. The Remainder ſwims on the Liquor in the Body of the Still, and is ſcarce diſtinguiſhable from boiled Turpentine. Diſtilled by the Retort it yields a fine eſſential Oil, and a large Portion of an acid Liquor, and after this a red thick empyreumatic Oil which becomes brown as the Fire is more encreaſed. The Remainder in the Retort is a light black Coal, which will not yield any Salt on Lixivation.

It is remarkable of Capiwi, that when pure, it does not give the Urine of People who take it the fine Violet Scent that is perceived in it after taking Turpentine of any Kind; but it communicates a remarkable Bitterneſs to it. It is a great Baſamic and Vulnerary, both internally and externally, and has an Aſtringency that the other liquid Refins want. It ſtops the *Fluor Albus* in Women, and the Gleet remaining after the Cure of Gonorrhœas in Men. It is good in Dyſenteries and other Fluxes of the Belly. It gives Relief in nephritic Complaints of all Kinds, promoting the Diſcharge by Urine, and ſheathing the Acrimony of the Salts of that Secretion, and bringing away Gravel or any other Foulneſſes in the Paſſages. It is to be given from ten to thirty or forty Drops for a Doſe, either in Sugar or in a poached Egg, or made up into Emulſion. But great Caution is to be uſed in giving it in Gonorrhœas, that the Virulence is all carried off firſt.

CHAPTER V.

TEREBINTHINA, *Turpentine.*

TURPENTINE is truly and properly the Name of that ſoft Reſin only, which is the Produce of the *Terebinthus* or Turpentine Tree. This is what we know in the Shops at this time under the Name of *Terebinthina Chia*, an additional Epithet given it from the Name of the Iſland whence we have it. People have obſerved however that the Fluid or ſoft Reſins of many other Trees, quite different in Genus and Claſs from the *Terebinthus*, much reſemble this Turpentine in many Particulars, and have therefore called them by the ſame general Name, diſtinguiſhing them only by Epithets. According to this Cuſtom of the World we are to obſerve, that we have at this Time four Kinds of *Terebinthina* in the Shops. Theſe are 1. The *Chian*, or as we uſually call it *Chio* Turpentine. 2. The *Venetian* or *Venice* Turpentine. 3. The *Strasburgh* Turpentine. And 4. The coarſe or common Turpentine.

TEREBINTHINA CHIA, *Chian Turpentine.*

This is the fineſt Turpentine we are acquainted with, and is the Turpentine of the Ancients: It is this Species that they always mean, when they ſpeak

of *Resina Terebinthina*, and that the *Arabians* after them express by the Terms *Hele Alimbath* or *Hele Alimbath*. It is when genuine (for we too frequently meet with it counterfeit in the Shops) a soft rather than a fluid Resin. Its Consistence when newest is seldom thinner than that of thick Honey, and in keeping it grows harder, but a long Time retains however Softness enough to give Way easily under the Finger. Its Colour is a silvery white with a Tinge of blueish, and a stronger of yellow, so that on the whole, in many Lights it looks green. It is very pure and fine, tolerably pellucid when viewed against the Light in not too large Quantities, and is extremely viscous, sticking more firmly to the Fingers when it has once Hold than any other Turpentine. Its Smell is indeed of the Turpentine Kind, but it has an aromatic Fragrancy that the common Kinds want, in which it approaches much to the white Balsam of *Peru*, or in some Degree to the genuine Balm of *Gilead*. Its Taste is somewhat acrid and pungent, but it has a very agreeable aromatic Bitter attending it in the Mouth.

It is to be chosen of a moderately solid Consistence, very glutinous and very fragrant when burnt: Its Colour is also a very great Test. It is often counterfeited in *London* at the Turpentine Houses; but its real mixed Colour is not easily hit. We have it from the Islands of *Cbio* and *Cyprus*; some have supposed the Turpentine of these two Islands to be different, but that is erroneous; all that is brought from both is wholly the same, and there is also some of it from *Rhodes*.

The Tree which produces it is one of the *Diæcia Pentandria* of *Linnaeus*, and one of the *Arbores flore à fructu remoto* of *Ray*. It is described by all the botanical Authors under the Name of *Terebinthus*, or the Turpentine Tree. It grows to the Size of our ordinary Plum Trees, and its Leaves remain green all the Winter. They are rigid and firm, and of the pinnated Kind. The Flowers are small, purple, and of the staminate Kind; they appear on the Tops of the Branches in the Month of *May*. The Fruit is roundish, and consists of a yellowish or purplish membranaceous Husk a Quarter of an Inch long, and of an acid and resinous Taste, containing a single Kernel, and often none at all. It is found wild in some Parts of *France*, *Spain*, and *Italy*, but in the Island of *Cbio* it is the commonest Tree met with, and in Summer spontaneously exsudates a vast Quantity of this greenish looking Resin which is collected for Use, but is much less fragrant at first than after keeping. They also promote the Discharge of this valuable Matter by wounding the Trunk and Branches in convenient Places.

There is a Species of *Puceron* or small Animal, of the Kind of those little green Insects which we see in Clusters about the Stalks of Elder, and other Shrubs and Plants, which vastly admires the Turpentine Tree. It makes its Way under the Integuments of a Leaf or young Shoot, and there deposits its young. Nature furnishes them a large and spacious Lodging; for the wounded Part rises into a Kind of Gall or Tubercle which sometimes grows to the Length and Thickness of a Finger. This is what is called the Horn of the Turpentine Tree, the Origin of which has been very differently guessed at by Authors.

The *Turks* and *Persians* have a Resin which is sold in all their Shops, and is used as a Masticatory under the Name of *Sakkis* and *Kouderuun*. The Women have a Piece of it always in their Mouths, and are continually chewing it: They

Upud Orientales Populos pro Masticatione lenit; Dicitur Lympham proliciendo Cataractas tollere. Albedinem &
firmatatem dentibus conferre, appetitum excitare, & grabatibus vix Coniunctis Valere.

they say it makes the Teeth white, and fastens them in the Gums, and prevents Catarrhs by the Quantity of *Saliva* drawn into the Mouth by it; they add also, that it gives them an Appetite, and sweetens the Breath: This *Sakkis* of the *Turks* is a firm Resin, of about the Consistence of *Burgundy* Pitch, and of a pale Colour. *Kempfer* has let us so far into the History of this, as to inform us, that the *Persians*, &c. gather it from a Kind of wild Turpentine Tree, so that it is in Reality no other than *Chio* Turpentine, only that they do not use it crude, but melt it over the Fire, keeping it there a little while, till on cooling it acquires the Consistence they would have it of, which is just such as is above, receiving an Impression from the Finger.

In some other Parts of the *East* they procure a Kind of brown Resin from this Tree by burning the Wood, and receiving the Resin as it flows out, but this is vastly inferior, in all its Qualities, to the natural Resin. *Chio* Turpentine, distil'd in a Retort, yields first about a fifth Part of its Weight, of a thin, limpid, and colourless Oil like Water; then more than half this Quantity of a yellow clear Oil; and after this, more than twice the Quantity of the first, of a thick coarse Oil of a reddish brown Colour, and about twenty Drops, or less, of an acid Liquor, from the Pound of Turpentine. The Remainder in the Retort is then a black Coal, from which all the Calcination and Lixivation in the World will never produce a single Grain of Salt, which is the Case also with many other of the Resins.

Chio Turpentine is less acrid than any other Kind, and is therefore to be prefer'd to all the others on many Occasions for internal Use. It is a very great Detergent and Balsamic. It is good in Coughs, and beginning Consumptions, and in all Exulcerations of the Lungs, or other Viscera. It is a powerful Diuretic, and like the other Turpentine gives a Violet Scent to the Urine. It is good in nephritic Cases, and in the *Fluor Albus*, and Gonorrhœas, but in the last Case it must be given with Caution. It is also said to be good in the Gout and Rheumatism, and the antient *Greeks* gave it in large Doses as a Purge. It is an Ingredient in many of the old Compositions, the *Theriaca* Mithridate, &c.

TEREBINTHINA VENETA,
Venice Turpentine.

Venice Turpentine is a liquid Resin, extremely different from the former, or fine Turpentine of the Antients, though call'd by the same Name; it is the thinnest and most fluid of all the Turpentine; its Consistence is between that of thick Oil and thin Honey; it is extremely viscous and clammy, its Colour is a pale yellow, it is tolerably pellucid; its Smell is resinous and acrid, without the aromatic Flavour of the *Chian* Kind, and rather disagreeable than pleasing; its Taste is very disagreeable, hot, acrid, and bitter. It is to be chosen thin and fluid, pellucid, of a pale yellowish Colour, and free from accidental Foulnesses.

It is brought to us from the Mountains of *Savoy*, and from some Parts of *France*: We used to receive it from *Venice*, whence its Name *Venetian*, but that Place has a long Time lost the great Trade it once had in it. Though the *Chio* Turpentine was the true and genuine *Terebinthina* of the antient *Greeks*, this was not unknown to them: They did not however call it Turpentine, as we abusively do, but the Resin of the *Larix*, the Tree from which it is produced: And *Galen* complains, that in his Time, not only this but the common Turpentine

of our Times, that is, as he properly calls it, the Refin of the Fir, were by some People sold, and used under the Name of the true Turpentine.

The Tree which produces the *Venice Turpentine* is one of the *Monæcia Monadelphia* of *Linnaeus*, and one of the *Arbores fructua flore remoto coniferae* of *Ray*. It is the common *Larch Tree*, describ'd by all the botanical Writers under the Name of *Larix*, and *Larix conifera folio deciduo*, and well known in our Gardens, where, though it makes a very bad Figure in Winter without its Leaves, it makes ample amends by the Beauty of its Appearance, and bright green of its Leaves in Summer. It grows to twenty Feet or more in Height: Its Bark is rough and crack'd on the lower Part, but smoother and evenner above: Its Wood is yellowish in Colour, firm and well scented. The Branches are sub-divided into small ones, which are tough and hang down, and are ornamented with short and narrow Leaves, a great many of which grow from the same Tubercle: The Flowers are of the Catkin Kind, and are barren: The Fruit grows in other Places, and is a small Cone, scarce larger than a Cypress Nut: The Tree is very common, wild, in the mountainous Parts of *Germany*, and in many other Parts of *Europe*. The Peasants of *Savoy* cut and wound the Trees in the great Heats, and collect the resinous Juice that flows from the Wounds in great abundance; it is at first thin as Oil and whitish, but it becomes somewhat thicker and yellowish as it is kept.

Venice Turpentine, distill'd in a *Balneum Vaporis*, yields a very small Quantity of a subacid Phlegm; and a large Portion, more than a fifth Part of its Weight, of a thin limpid Oil like Water: The Matter then taken out of the Alembic and put into a Retort, yields about an Ounce from the Pound of an acid Phlegm, and a small Quantity of an urinous one; a somewhat larger Quantity of Oil than before, but this yellow and thicker than the other; and after this, almost the whole Remainder in the Retort rises and comes over in Form of a reddish thick Oil; the small Remainder in the Retort will not yield the least Portion of Salt by Lixiviation. *Venice Turpentine*, more than all the other Kinds, gives the Violet Scent to People's Urine, and this whether taken internally, or only apply'd to Wounds: Given in Glysters it does this most speedily of all. It has the same Virtues with the *Cbian Turpentine*, but is more acrid, and therefore is less used internally than that, though it is a common Ingredient in balsamic and restringent Pills. In Clysters, dissolved with the Yolk of an Egg, it is an admirable Diuretic, and is of great Use in nephritic Cases. It is a common Practice to boil it to the Consistence of Resin, before giving it internally, but this dissipates a great Part of its Virtues.

Externally it is greatly celebrated as a Vulnerary and Balsamic, and is an Ingredient in a great number of Ointments and Plaisters: Dissolved in the Yolk of an Egg alone without farther Mixture, it makes an excellent Digestive; given in Glysters, it is of great Service in Dysenteries and Ulcerations of the Intestines. The Preparations of *Venice Turpentine* in Use in the Shops, are the Spirit, Oil, and *Colophony*. These are all prepar'd by the same Process. Put into a Retort as much *Venice Turpentine* as will fill one third Part of it, give a gentle Fire, and there will come over into the Receiver a fine limpid ethereal Oil, joined with a little Phlegm; this is call'd the Spirit of Turpentine: After this encrease the Fire, and a pellucid yellowish Oil will come over, this is properly and distinctly the Oil of Turpentine, but this is seldom met with. The

Alembic

Alembic is generally used instead of the Retort, and the limpid and watery Oil first mentioned is kept under the common Name of Oil and Spirit of Turpentine. The Mass remaining at the Bottom of the Retort, in this Distillation, is hard but friable, and glossy, and of a dark Colour, this is *Colophony*: If the Fire were urged farther less of it would remain, and a thick Oil would come over call'd Balsam of Turpentine. The Oil and Spirit of Turpentine are diuretic, aperient, and detergent; they are by some commended in Pleurifies, and in Disorders of the Breast; but with us they are little used in such Intentions; the *Colophony* is less detergent than the Turpentine in its natural State, but it is given in Pills for the *Fluor Albus*, and Gleet; and is an Ingredient in many of the Plaisters of the Shops.

TEREBINTHINA ARGENTORATENSIS,
Straßburg Turpentine.

This is a Turpentine extremely different from the two former, and produced from as different a Tree, as that which yields either of those is from the other. In Consistence it is usually met with of a middle Degree, between the *Chian* and *Venice* Kind, much thicker than the *Venice*, and yet much thinner than the *Chian*: This however, though one of the most obvious of the Characters of Turpentine, is a very uncertain one, as they all vary in Consistence, as they have been longer kept. The *Straßburg* Turpentine has Characters enough however for the distinguishing it from the *Venice*, exclusive of this.

It is extremely clear and pellucid, and of a pale brownish yellow Colour; when fresh indeed it is white, but it so soon acquires somewhat of this brownish Cast, that we seldom see it without it: It is less tough and viscous than the *Venice* Turpentine: Its Smell is far from the disagreeable one of that Kind; it has indeed something of the Turpentine Flavour, but it has a grateful Fragrancy with it, and somewhat of the Citron like Scent of the true *Balm of Gilead*: It is less acrid and more bitter to the Taste than the rest of the Turpentine, and has the Citron Flavour in the Mouth much more strongly than when only smelt to.

It is brought to us from the Place whose Name it carries, and is produced in great abundance in the mountainous Parts of the Country thereabout. The *Greeks* knew it very well, they properly call'd it *Resina Elatina* or Resin of the Fir, and esteem'd it a good Medicine, but inferior to the *Chian* Turpentine.

The Tree which produces it is one of the *Monæcia Monadelphica* of *Linnaeus*, and one of the *Arbores fructua flore remoto coniferæ* of *Ray*. It is a Species of Fir, and is described by the *Bauhines*, *Tournefort*, and the rest of the Botanists, under the Name of *Abies Taxi folio fructu sursum spectante*. It is a tall handsome Tree: Its Stem has no Knots or Branches up to a great Height, above this Part the Branches grow circularly round the Trunk, four or five at a Joint; these have regular Shoots from them, standing crosswise two at a Joint: The Leaves are small, narrow, and short; they stand very thick on the Branches, and are of a bright green on the upper Side, and white underneath: The Cones or Fruit are short and thick, and stand erect on the Branches; they are generally loaded in Autumn with a large Quantity of Resin, as are also the Ends of the Branches, this is white and very fragrant.

The People where these Trees are frequent wound them in several Places, particularly on the Tops of certain Tubercles which arise under the Bark; the
Resin

Resin flows abundantly from these, and is at first as thin as Oil, but it soon thickens: The finest is that which is obtained from the Tubercles before mentioned, but the common Method is to strip Pieces of the Bark of two Inches wide down from fifteen Feet high to within a Foot of the Ground, at a Hand's Breadth Distance all round the Tree; this is done in the End of *May*, and the Turpentine flows down into Vessels placed to receive it for a long Time: After this the Cracks or Wounds fill up with a dry Resin, which is taken out afterwards, and sold by the Name of white Incense. The Virtues of the *Strasburg* Turpentine are in general the same with those of the *Venice* Kind: It is esteem'd indeed more detergent and diuretic, and the Agreeableness of its Flavour makes it more esteem'd for internal Use.

TEREBINTHINA COMMUNIS,

Common Turpentine.

This is a fluid Resin different from all the former Kinds in many Respects, and the least esteem'd of any. It is a very coarse Matter, of a Consistence much thicker than any other Turpentine, except the *Chian*, and of a dirty brownish white Colour: It is as thick as Honey, and as little pellucid; it is very tough and viscous, and much heavier than the other Turpentine; its Smell is strong and very disagreeable, and its Taste very bitter, acrid, and nauseous. It is brought to us in great abundance from many Parts of *Germany*, and in *France* it is produced also in great abundance.

The Tree which affords it is one of the *Monæcia Monadelphia* of *Linnaeus*, and one of the *Arbores florea fructu remoto coniferæ* of *Ray*. It is of the Pine Kind, and is described by the botanical Writers under the Name of the *Pinus Sylvestris*: It resembles the *Pinus Sativa* in all Respects, but is lower, and its Leaves are shorter, and its Fruit smaller. Though this is the Tree it is usually and most abundantly produced from, it is not however the only one that affords it; all the Species of Pine yield it, and where they are common it is collected from them. It often flows spontaneously, but sometimes they wound the Trees to procure a larger Quantity of it. There is no Tree in the World which affords such an abundance of Resin as the Pine, it is often so loaded with the Abundance and Turgescence of this Juice, as to be choak'd by it; this is a Disease almost peculiar to the Pine, which is call'd *Tæda* when under it. The Pitch Tree, and the *Larix* or *Venice* Turpentine Tree, sometimes also become *Tæda*, but this is very rare; there are fifty of the Pine for one of either of these.

They wound the Trunk of the Pine when full of this Juice, and dig a Trench at its Foot, into which the liquid Resin runs; the upper Part of this dries and hardens into a solid Matter, which they call *Barras*; and if it proves white and clean, they sell it to the Druggists under the Names of Galipot, or Garipot, and white Frankincense; if it is dirty it is sold at a cheaper Rate, and call'd common Incense. They mix both these with Wax for the making of Flambeaux, but the white is the most esteem'd. The more fluid Mass under this Crust they strain through Wicker Baskets into Barrels, what goes thro' is pack'd up and sent away under the Name of common Turpentine; what is fouler and remains behind, they distil in an Alembic with a large Quantity of Water, and obtain from it the common Oil of Turpentine.

The common Turpentine is rarely used in Medicine, some make it an Ingredient in Ointments instead of the *Venice* Kind, but it spoils their Consistence.

Its Virtues are in general the same with those of the other Turpentine, but, it is so much coarser, and more offensive to the Palate and Stomach than all the rest, that it is, no Wonder it is not used as they are.

These are the four Species of Turpentine used in our Shops, the Antients knew them all, and distinguish'd them by Names, not of the uncertain Kind that ours are, form'd on the Names of the Places whence they are brought, or on their Frequency or Cheapness, but on the Names of the several Trees which produced them, instead of the Obscurity and Ignorance that attends our Method of naming them. It were much to be wish'd, that those who have Occasion to write of them hereafter, would banish these inexpressive Names, and call them after the manner of the *Greeks*: The first Turpentine simply, as the Resin of the Turpentine-Tree; the second the *Resina Laricis*, or Resin of the Larch-Tree; the third the *Resina Abietis*, or Resin of the Fir-Tree; and the last the *Resina Pini*, or Resin of the Pine-Tree; the very Names would then carry with them a Remembrance of the Nature of the Drug.

CHAPTER VI.

LIQUIDAMBARUM,
Liquid Amber.

THE Drug call'd in the Shops *Liquidambarum*, Liquid Amber, and *Ambarum Liquidum*, is a fluid Resin, of a fatty Appearance, tough and viscous, and in Consistence a little thicker than *Venice* Turpentine when tolerably new, but in long keeping it grows almost solid. Its Colour is a reddish yellow, somewhat more of the red than what we usually understand by the Term Orange colour'd, but with some Admixture of brown in it. Its Smell is very fragrant, seeming a Mixture of the aromatic and perfum'd Kind; and resembling the Smell of a Mixture of *Styrax* and Amber. Its Taste is somewhat acrid, and it is very aromatic, and fragrant on the chewing.

Liquid Amber is brought from *New Spain*, and some other Parts of *America*. Some Years ago it was very frequent in the Shops, and a more fluid Kind of it, call'd Oil of Liquid Amber, was not less frequent among us, but at present both are grown into Disuse, and it is not easy to meet with either.

The Tree which produces it is one of the *Monæcia Polyandria* of *Linnaeus*, and one of the *Arbores flore fructuque aggregato* of Mr. Ray. It is described by *Hernandez* under the Name of *Xochio cotzo Quabuite Arbor Liquidambari Indici*, and by *Ray* under that of *Styrax aceris folio*, and *Arbor Virginiana aceris folio*, *potius Platanus Virginiana Styracem fundens*. It is a very beautiful Tree: It grows to a vast Height: Its Leaves are broad and divided like those of the Maple, and the Fruit in some Degree resembles that of the *Platanus* or Plane Tree, consisting of several yellowish Capsules, prominent in part, and terminating each in a prickly Point: The Seeds are of an oval Form. This Tree wounded in the great Heats, affords a large Quantity of the fragrant Resin, call'd Liquid Amber; and the Fluid, call'd Oil of Liquid Amber, separates itself to the Surface of this when it has stood some Time in the Vessels. When we bought large Quantities of this Drug, the *Indians* had a Way of adulterating it with another fluid Resin, produced in the manner of the black
Peruvian

Peruvian Balsam, by boiling the Branches of the Tree in Water, and separating the oily Matter found swimming at Top; they sometimes also ventured to send this over alone, under the Name of Liquid Amber, but it was always coarser, less pellucid, and less fragrant than the genuine Drug. It was used much by the Perfumers, and to scent Gloves, and other Parts of the Habit. In Medicine it was esteem'd detergent and balsamic, and was given to promote Urine and the Menfes: Externally also it had great Credit as a Digestive, but at present we have wholly rejected it in all these Intentions.

CHAPTER VII.

STYRAX LIQUIDA,

Liquid Storax.

THE Drug known in the Shops under the Name of Liquid Storax is wholly different from the common Storax; nor is it easy to guess how it came to be call'd by the same Name. The old *Greeks* knew but one Kind of Storax, which was the solid Kind, in Use in the Shops at this Time; but the *Arabians* distinguished this Drug into two Species, a solid, and a liquid; which Distinction is kept up to this Time, and the Name Liquid *Styrax* given to a Substance as different as one thing well can be from another, from the dry or solid Kind. What we call Liquid Storax, and the *Arabians* *Miba*, is a fluid Resin, or resinous Juice, of which we have two Kinds, the one pure, the other foul.

The pure or fine Liquid Storax is a thick viscous Matter, of the Consistence of *Venice* Turpentine, or thicker; sometimes indeed with long keeping it becomes as thick as Honey; whatever be its Consistence however, it is clean and pellucid, of a brownish Colour, sometimes with a Cast of reddish, sometimes greyish in it: Its Smell is somewhat like that of the common Storax, but much stronger, and even disagreeable: Its Taste is acrid, aromatic, and somewhat bitterish; and it is oily or unctuous. It is to be chosen thin, pellucid, of a clean brown Colour, and of a very strong Smell.

The impure or coarse Liquid Storax is a tough and viscous Matter, of the Consistence of Birdlime; it is not at all pellucid; its Colour is grey or brownish; it is less resinous, and more fatty than the finer Kind; its Smell is much more languid, and its Taste more disagreeable: It seems indeed to be no other than the fouler and less valuable Matter, separated from the other in the purifying it. It is by much the most common Liquid Storax in the Shops, and to this foul Drug some of the late Writers, and indeed some of the *Arabians*, have given the Name of *Stæte*, the Name of a very pretious Drug related to *Myrrh* among the old *Greeks*. We very seldom meet with the pure Liquid Storax in the Shops; and even the other, bad as it is in itself, is often adulterated, our Druggists sometimes mixing no cleaner a Substance than common Birdlime with it on this Occasion.

Authors have had great Disputes about the Origin of Liquid Storax, the Name *Stæte* however absurdly apply'd to it, has induced some to believe it was no other than a Preparation of *Myrrh*, but this is proved false by Experiment: *Myrrh*, in whatever Form, being in great Part soluble in Water, this

Two of Liquid Strax with rectified Spirit of Wine yielded Five Dr of Resinous Extract.
from the Remaining Dr Water took up only a few Grains. Newman p. 292.

only in oily or fatty Substances as the other Resins are; and to this it may be added, that its Taste and Smell are wholly different from those of *Myrrh*. Others have thought it a Preparation of the common Storax, with Wine, Oil, and Turpentine, prepar'd either by Decoction or Expression. Others have suppos'd it a natural Resin, expressed from the Fruit of the Storax Tree; and others a Preparation of the Nature of the Balsam of *Peru*, made by boiling the young Shoots, and Buds of the Storax Tree, or of the Liquid Amber Tree.

Petiver gives us a much more rational Account of it, if it may be depended on; he tells us, that it is prepar'd from the Bark of a Tree, call'd by the *Turks* *Rosa Mallos*, which is frequent in the Island *Cobras*: They annually strip the Bark off this Tree, he says, and after bruising and macerating it in Sea-Water, they boil it down to the Consistence of Birdlime: They then collect the resinous Matter which swims on the Surface, which being foul they melt it, by boiling it again in Sea-Water, and in this Condition strain it: What passes the Bags is the finer, and what remains in them the coarser Liquid Storax. He adds, that it is a Drug in great Esteem in the *East*, where it is used as a Perfume. It is a little unlucky that no Body has given us any Description of this *Rosa Mallos*, the Tree which *Petiver* so positively names as that which produces this Drug.

The Virtues of Liquid Storax are nearly related to those of the Turpentine. It is prescribed internally as a Detergent and Diuretick; and externally to prevent Mortifications. The *French* use in their Hospitals an Ointment, which they call *Unguentum de Styrace*, and speak much of its Virtues. The Preparation is this: Melt in five Ounces of Nut Oil, *Gum Elemi* and yellow Wax, of each three Ounces and three Drams; add Colophony seven Ounces and a half; when all these are perfectly melted together, add pure Liquid Styrax three Ounces and three Drams; let the whole be well mix'd, and then cool.



Natural vegetable Productions

Used in M E D I C I N E.

C L A S S the S E C O N D.

SOLID RESINS.

TH E Bodies of this Class are somewhat more numerous than those of the former, and may be conveniently arrang'd in two Divisions, as they are more or less frequently used in the Shops.

The solid Resins more frequently used are,

- | | |
|--------------|-------------------|
| 1. STORAX. | 5. ELEMI. |
| 2. BENJAMIN. | 6. LAC. |
| 3. MASTICK. | 7. DRAGONS BLOOD. |
| 4. OLIBANUM. | 8. CAMPHIRE. |

The solid Resins less frequently used are,

- | | |
|----------------|------------------|
| 1. ANIME. | 5. LADANUM. |
| 2. COPAL. | 6. SANDARACH. |
| 3. CARANNA. | 7. RESINA HEDUÆ. |
| 4. TACHAMAHAC. | |

SOLID RESINS

More frequently used in M E D I C I N E.

CHAPTER I:

STYRAX,
Storax.

ST O R A X is a dry and solid Resin, of a reddish Colour, and a peculiarly fragrant Smell, of which the Antients have distinguish'd two Kinds, very different in Value, under the Names of the *Styrax Calamita*, and *Styrax Vulgaris*, the common, and the *Calamite Styrax*, a Distinction we still keep up.

The *Styrax Calamita*, call'd also *Styrax* in Tears, is vastly the purer and finer Kind. It is brought over to us in small loose Granules, or else in larger Masses composed of such, with no other Substance between or among them: These
Granules,

Dicitur Calamita, quod ex arboris in modum brandinis cavata & exesa profluere. Arabo. l.

The common Storax is extracted by boiling, from the Branches & root of the Tree whereas the other flows naturally from it.

Granules, or little Lumps, are from the Bigness of a Pin's Head to that of a large Pea, or bigger; they are usually of a pale brownish red Colour, sometimes whitish, and of a tolerably firm Substance; they become somewhat fatty in the Mouth, and form a tough Matter on chewing. This Kind of Storax is of a very agreeable Taste, somewhat acrid and resinous, but sweet and pleasant withal; the Smell is very fragrant, but especially on burning: A little of it thrown on burning Coals, or only held to a Candle runs at once, and afterwards takes Fire, burning with a brisk Flame, and an extremely fragrant Smell. This fine Kind of Storax used antiently to be packed up in Reeds for Safety of Carriage, and it was thence that the Antients call'd it *Styrax Calamita*. *vid. Ray. p. 1002.*

The common Storax is a pure and fine Resin, though less so than the former Kind. It is brought to us in large Lumps, not form'd of small Granules connected together, but of one uniform Consistence. It is of a brownish or somewhat Orange-red in Colour, deeper than the *Calamite* or fine Kind, and more fatty in its Appearance: It shines and appears resinous however where broken, and becomes tough in handling: It sometimes is soft, and exsudates from the larger Masses particularly, a kind of fluid Resin of the Consistence of Honey: This has the same fragrant Smell, and the same Taste with the *Calamite* Storax, only in a fainter and more remiss Degree.

These are the two Kinds of Storax, properly distinguish'd by the Names of the *Calamite*, and common Storax, but neither of these are the Storax commonly met with in our Druggists Shops; what is constantly met with under the Name of Storax there, is a Matter form'd of a kind of Saw-Dust connected into Lumps, or large and light Masses, by just as much of a fragrant Resin of the Storax Kind, as will make them hang together. This is what our Apothecaries use under the Name of Storax, but they are to be advised, if they cannot get either of the other Kinds, never to use this in its rough State, but to strain the pure Resin from the Filth, and use no Part of the latter.

This foul Storax, where any other is to be had, ought wholly to be rejected; the other two Kinds do not differ from one another, any otherwise than as they are let out from the Tree by natural Exsudation, or by Incision; what flows naturally forming small Drops, and drying soon; the other running from Wounds in the Tree in larger Quantity, and drying more slowly and imperfectly, and acquiring a deeper Colour by that means.

Storax is brought to us from *Syria*, and the *East-Indies*. It is to be chosen pure, very fragrant, and of an acrid Taste.

The *Arabians* in general have confounded the solid and liquid Storax together, some of their Writers however have distinguish'd them, as *Avicenna*, who treats of the liquid Storax under the Name of *Miba*, and of the dry under those of *Astarac* and *Lebni*.

The Tree which produces the Storax is one of the *Icosandria Monogynia* of *Linnaeus*, and of the *Arbores fructu Calculato* of *Ray*. It is described by *Tournefort*, and others, under the Name of *Styrax Arbor*, and *Styrax folio mali Cotonei*. It grows to a moderately large Tree: Its Bark, and its Leaves, greatly resemble those of the common Quince Tree; they are of a bright green on the upper Side, and whitish underneath: The Flowers grow in little Clusters, four, five, or six together, from the Shoots of the former Year; they are white, very sweet scented, and in some Degree resemble Orange Flowers:

The Fruit is of the Size of a Wallnut, thick, fleshy, and hoary; sweet at first, but afterwards of a bitterish Taste; containing one or two Seeds, the Kernel of which is white, and has the Taste of Storax. The Tree grows in some of the warmer Parts of *Europe*, as well as in the *East*, but with us it does not afford any Resin.

Styrax, chemically analysed, yields first a small Portion of an acid Phlegm of a reddish Colour; after this a reddish clear Oil, in about the Quantity of six Drams from the Pound; after this there comes over a thick Oil, and a volatile Salt sublimes to the Top of the Vessel in Form of Flowers, like those of Benjamin; after this a yet thicker reddish Oil comes over, and the Remainder in the Retort, calcined and lixiviated, yields an extremely small Portion of a fix'd Salt, not of the alkaline but of the *Sal Salsus* Kind, the Quantity not more than four Grains from the Pound.

Storax is found, by these Experiments, to contain a smaller Quantity of essential volatile Salt than Benjamin, but much more of a fine thin Oil; though even in this, the Quantity of that Oil is much less than in most of the other Resins.

Storax is much recommended as a Detergent and Balsamic, in Disorders of the Breast: It is also esteem'd a Cordial, and is recommended in Vertigos, and other Disorders of the Head and Nerves. It is an Ingredient in many of the old Compositions, but it is not greatly used in extemporaneous Prescription. A fine fragrant Oil may be procured from it by Distillation in the Alembic with Water, and Flowers may be procured from it in the same manner as from Benjamin, and having the same Virtues with those of that Resin, but these Preparations are not made or call'd for in the Shops.

CHAPTER II.

BENZOINUM, *Benjamin.*

BENJAMIN is a dry and solid Resin, brought to us in Masses of various Sizes, often considerably large: It is moderately heavy, and of a seemingly compact Texture, but really very friable and shattery, breaking into a number of Fragments on a slight Blow: The Masses of it are not simple and uniform as in many of the other Resins, but are composed of a number of smaller Masses or Granules, which are of a whitish or yellowish Colour, but with a Cast of greyish and purplish on the Surface. It is very inflammable, and diffuses a fragrant Smell while burning: It is naturally also of a brisk, pungent, and agreeable Smell, and of an acrid but not disagreeable Taste. It easily breaks between the Teeth, and has a remarkably resinous Taste at first in the Mouth. We distinguish Benjamin into two Kinds in the Shops, the amygdaloid, and the black; the amygdaloid is the Kind just described, and is so call'd from the Granules it is composed of, in the Mass looking like the Kernels of Almonds, especially when it is first broken; the black is brought in Masses of a dusky Colour, with none of these whitish Granules in them.

Benjamin is brought to us from the *East-Indies*. The Kingdom of *Siam*, and the Islands of *Java* and *Sumatra* afford it in great abundance.

Rectified Spirit of Wine dissolves out of an 3j. — 3ij
From the Residue Water dissolved about 3ss of Gumma matter, the Rest was
chiefly Saw Dust. Neuman page 290.
Another 3i of Storax treated with Water first gave 3ij of Extract
Spirit — 3iv of Residue.

Virginia & Carolina, & has been thence brought into England, where it grows with Vigor

& in this Quality of Dissolving in boiling Water it differs both from Essential Oyls & Resins.

Rectus Sp. Vini Rectificato in Operatione, quæ aqua Rosarum infillata. Can. cosmeticum Elegantißimum & fortissimum
Hoffman. de Medicamentis Balsanis. P. 50. § 9.

It is to be chosen fresh, and of a quick pungent Smell, easily broken, and full of the white Almond like Granules. The black *Benjamin* is vastly inferior to this, and ought wholly to be rejected.

The Ancients were not acquainted with this Drug, as *Garcias* has been at the Pains abundantly to prove. The Tree which produces it is one of the *Enneandria Monogynia* of *Linnaeus*, and one of the *Arbores pruniferae* of Mr. Ray. It is described by *Caspar Baubine* under the Name of *Belzoinum*, and by *Grimm* in the German *Ephimerides* under that of *Arbor Benzoini*. *Linnaeus* in the *Hortus Cliffortiana* describes it under that of *Laurus foliis enerviis ovatis utrinque acutis integris annuis*. It is a very large and beautiful Tree. Its Leaves are somewhat like those of the Lemon Tree, but smaller and whitish underneath. Its Flowers are small and resemble those of the Bay Tree, whence *Linnaeus* has made it of that Genus. Its Fruit is of the Size of a Nutmeg, roundish, but somewhat compressed, and consisting of a soft external Part like the green Coat of a Walnut, but less thick, and a Nut within, the Shell of which is thinner than that of a Filbert. The Kernel is white or greenish, and is covered with a wrinkled Skin of a red Colour. *America* furnishes us with no *Benjamin*, but the Tree which produces it in the *East*, is common there.

When the *Benjamin* Trees in *Java* and *Sumatra* are six Years old, the Natives cut them in several Places under the large Branches in an oblique Direction, wounding them to the Wood. The *Benjamin* flows from these Wounds, and is white and soft at first, but by Degrees it becomes harder, and acquires a brownish or reddish Colour on the Surface from the Air. If this is taken from the Tree in Time, it is clean and fine, if not, it gets mixed with several Foulnesses, and becomes of much less than its natural Value. A good vigorous Tree properly wounded, will sometimes yield six or seven Pounds of fine *Benjamin*; but in general half that Quantity is reckoned no bad Produce. They never cut the same Tree a second Time, but as they are quick Growers they cut down the Tree they have used, to make Room for other younger ones to grow vigorously up to the Period of the sixth Year for Use.

Benjamin, distilled in a Retort, yields a considerable Quantity of Oil, part of it yellow, thin, pellucid, and very fragrant, and part thick and brown. Beside this, it yields a moderate Portion of an acid Liquor, and by Lixivation the Remainder yields a little fixed Salt, leaving behind it but a very small Portion of Earth. If the Gum be sublimed in close Vessels, it sends up a great Quantity of fine, light, and pungent Flowers, and the same are also separated from it by boiling it in Water. In the latter Process it remains suspended, and in a State of Solution in the Water while hot; but as it cools it forms itself into long Needles. A Pound of *Benjamin* will yield two Ounces of Flowers by Sublimation, and the same Quantity will yield about one Ounce or very little more by Decoction.

Benjamin is a great and powerful Expectoant. It is given with Success in Asthmas and Infarctions of the Lungs, and in inveterate Coughs. The Flowers are however oftener given in these Intentions than the Resin in Substance. It is sometimes used externally in Plaisters applied to the Head for Head-achs, and to the Stomach to promote Digestion. A Tincture of it made in Spirit of Wine and dropped into Water, makes what is called Virgin's Milk, used to

take Pimples out of the Face. The only Preparation of *Benjamin* used in the Shops beside this Tincture, is the Flowers which are thus prepared.

FLORES BENZOINI,
Flowers of Benjamin.

Beat a Quantity of *Benjamin* to a gross Powder; put it into a tall earthen Vessel capable of holding four times as much; and fit to the Top of the Pot a Cone of double Paper as tall as the Pot is high, or more than so; then make a very small Fire under the Pot, and having several more Paper Cones of the same Kind at Hand, every Hour take off the former, and put on a fresh one; unroll the Cones as they are taken off, and there will be found in them the Flower of *Benjamin* in fine silky Filaments; they must be swept off with a Feather, and kept in a Vessel well stopped.

They are sudorific, and good in Asthmas and Tubercles of the Lungs.

CHAPTER III.

MASTICHE,
Mastick.

MASTICH is a solid Resin different from the former, in that it is not brought to us in large Masses, but in the Drops or Tears as it naturally forms itself in exsuding from the Tree, which remain detached and single.

It is very firm and solid, of a pale yellowish white Colour. Its Smell is somewhat acrid but agreeable, its Taste very resinous, but withal it is somewhat aromatic and astringent. When taken into the Mouth it immediately flies to Pieces between the Teeth; but the Heat of the Part soon acts upon it; and it concretes again into a tough Substance like Wax, which takes any Form without breaking; and by continued chewing becomes as white as Snow. The Granules or Lumps of Mastich are usually about the Bigness of a Pea, and of a somewhat roundish Form. They are very easily reduced to Powder in a Mortar, and if thrown on burning Coals, they readily take Fire, and afford a resinous but very agreeable Smell.

Mastich is brought to us principally from the Island of *Cbios* in the *Ægean* Sea. It is found there better and in greater Abundance than in any other Part of the World. It is to be chosen clear, pellucid, and of a pale yellowish Colour, well scented and brittle. Such as is blackish, greenish, or dirty is to be rejected. We meet with a Kind of Cement sometimes kept in the Shops under the Name of Mastich. It is composed of Mastich and several other Ingredients, and is formed into Cakes for Use: This is intended for the Service of the Lapidaries to fill up Cracks in Stones, and for other such Purposes; but is by no Means to be used as Mastich for any of the medicinal Purposes. The Greeks were acquainted with Mastich: *Dioscorides* and *Theophrastus* call it *Mastiche* and *Resina Schinina*. The *Arabians* call it *Mastech*, and we *Mastiche*, *Mastix*, and *Resina Lentiscina* from the Name of the Tree which produces it.

This Tree is one of the *Arbores flore a fructu remoto bacciferæ* of *Ray*. It is described by *Caspar Baubine* and the other botanical Writers, under the Name of the *Lentiscus vulgaris*, or the common Lentisk Tree. It grows to twelve or fifteen Feet

Mastic dissolves almost totally in Spirit of Wine, it is pretty singular, that during the digestion all Portions separate, indissoluble in the Spirit, though in Appearance Resinous amounting to about two Scruples in an Ounce.

Feet high, and is usually very much branched : Its Leaves are of the pinnated Kind, and have no odd Leaf at the End. They are small but thick, smooth, and of a shining green, of a quick Smell and acrid Taste. Some of the Trees bear the male Flowers which are of the staminate Kind, and others the Fruits which stand in Clusters, and are of the Size of Ivy Berries. They consist of a hard Shell, covered with a resinous Membrane, and containing a soft and strongly scented Kernel. This Tree approaches greatly to the Turpentine Kind, which it differs principally from, in that it has no odd Leaf at the End of the *Pinnæ* as the Turpentine Tree has. It grows not only in the other Islands of the *Ægean* Sea as well as in *Chios*, but also in *France*, *Spain*, and *Italy*; but it does not afford the Resin in any Part of these Countries. In *Chios* it flows spontaneously in no small Quantities, but the People always wound the Trees also, to procure the larger Quantities.

Bellonius says, that the Tree yields Mastich no where but in the Island of *Chios*, where it is cultivated for this Purpose, with as much Care as Vines are with us, and that the great Riches of the Island are in this Drug, which the Tree yields but in very inconsiderable Quantity without this Culture; but by this means they are able, beside what they send into our Part of the World, to pay by Way of Tribute to the Grand Seignior, an immense Quantity of it. The Trees are wounded in the Months of *August* and *September*, and the Resin continues flowing from them a long Time.

Mastich, distilled in a Retort, yields first a limpid but scented Phlegm, of a subacid Taste in the Proportion of about an Ounce to the Pound; after this there comes over a browner Liquor of a more strongly acid Taste, and somewhat bitterish, in a little more than the same Quantity; then a limpid and clear, but reddish Liquor, of a mixed acid and alkaline Nature. This is in very small Quantity, not more than forty or fifty Drops from the Pound; then about half a Dram from the Pound of a fine yellow limpid Oil, followed by twice the Quantity of a reddish limpid Oil, and this by eight Times the Quantity of a brown, but yet thin, clear, and limpid Oil; after this comes over a thick brown Oil of the Consistence of Honey, and this in no less Proportion than ten Ounces to the Pound. The Remainder in the Retort is very small in Quantity, and when calcined, it yields by Lixivation an extremely small Portion of a fixed Salt, not more than two or three Grains from the Pound, and this not of the alkaline, but of the *Sal Salsus* Kind.

The People of *Chios* are so fond of Mastich, that they make it an Ingredient even in their Bread by Way of giving it a better Flavour. They have some of it also continually in their Mouths by Way of Mastichatory. They say it cleans and fastens the Teeth, and gives the Breath an agreeable Smell. In Medicine it is detergent, astringent, and stomachic. It is greatly recommended in inveterate Coughs, and against spitting of Blood. It strengthens the Stomach, assists Digestion, and stops Vomitings. It is also used externally in Plaisters to the Region of the Stomach and Intestines, and is said to stop Vomitings and Purgings by that Means. It is an Ingredient in many of the old Compositions.

CHAPTER IV.

OLIBANUM,
Frankincense.

OLIBANUM is a dry resinous Substance brought to us in detached Pieces or Drops as it were, like those of Mastich, but larger and of a less pure and pellucid Texture. It is of a pale yellowish, white Colour, but with some Mixture of a brownish Cast in it. The Granules or Drops of it are roundish or oblong, of a smooth Surface, and tolerably firm Texture. It is moderately heavy: Its Smell is strong, but not disagreeable, and its Taste bitter, acrid, and resinous. It is very inflammable, and if only touched with a lighted Candle it burns with a bright and copious Flame. It readily breaks between the Teeth, but it does not concrete into a tough Mass in the Manner of Mastich, but sticks to the Teeth and is very disagreeable in the Mouth. The Drops of *Olibanum* sometimes adhere two or more together; when two oblong and small ones adhere to one another: Fanciful Writers have called such male Frankincense, from the Resemblance to a Man's Testicles, and when two larger and rounder Pieces adhered, they likened it to a Woman's Breasts, and called it female Frankincense, and hence the Origin of the *Thus testiculosum* and *Thus mammosum* of these Writers. Sometimes four or five of these Granules were found adhering together to the Bark of the Tree. This was called the Cluster Frankincense, and the small Fragments broke off from the rest in the Carriage were preserved separately, and made another Kind under the Name of *Manna Thuris*, the Manna of Frankincense. How idle and ridiculous were such Distinctions among People who knew at the same time, that the Drug was the same under all those accidental Forms?

Olibanum is to be chosen whitish, pure, dry, and as much approaching to Pelucidity as may be. It has been known the most universally of perhaps any Drug in the World, and that from as early Times as those of *Theophrastus* and *Dioscorides*, who describe it under the Name of *Libanos*, and *Hippocrates* also mentions it under that of *Libanoton*. The *Latins* call it *Thus* and *Tus*, and the *Arabians* *Rouder*, *Conder*, and *Hateth*. The earliest Accounts we have of any thing, tell us, that Frankincense was in use among the sacred Rites and Sacrifices, and it is used in many different Parts of the World at this Time to the same Purposes. As well however as the World has at all Times been acquainted with the Drug itself, we are not yet well acquainted with its History. The Country which produces it is a much disputed Point among Authors. Some affirm it never was found any where but in *Arabia*, and there only in that Part called *Sabæa*, or from this famous Product *Arabia Thurifera*. Others are for bringing it from *Æthiopia*, and some others from other Places.

If we are uncertain as to the Place whence the *Olibanum* is brought, we are much more so as to the Tree which produces it. *Theophrastus* mentions it, but that in such a Manner, as shews he was very uncertain about it. He describes it as a small Shrub very much branched, and having Leaves like the Pear Tree; but he tells us that others said its Leaves were like those of the Lentisk, and that others said that both the Leaves and the Bark of the Tree were like

— — — Molles sua Thura Sabæj Virgil Georg. 1. Line 57.
— — Solis est Thurea Virga Sabinis. — — Georg. 4.

Out of an Ounce of Hibiscum Rectified Spirit of Wine dissolved.
5 Drams 2 Scruples 6 Grains

from the Remainder Water took up 2 Drams 5 Grains

out of another 3j Water dissolved 3ij ℥i

The Remainder gave up to Spirit 3iv gr xxxiij

Rectified Spirit of Wine dissolved 3xv out of 3xvj of it & of the
Remaining 3m Water takes up only 2j.

like those of the Bay Tree. *Diodorus Siculus* says it grows like the *Ægyptian Accia*, but with Leaves like those of the Willow. *Garcias* makes it a low Shrub with Leaves like those of the Lentisk, and on the contrary *Thevet* says it resembles the Pine Tree. Which of these Accounts approaches most to the Truth, we have yet no means to distinguish.

Olibanum, distilled by a Retort, affords first a moderately large Quantity of an austere and acid Phlegm, having the Smell of the Resin, and a reddish Colour; there is no less than four Ounces of this from the Pound; after this comes over a reddish Liquor in small Quantity, partly acid, and partly urinous, then somewhat more than half an Ounce from the Pound of a fine yellow limpid Oil; after this a larger Quantity of a brown, limpid, and thin Oil, but somewhat thicker than the former; then a large Quantity of a blackish Oil as thick as Butter. The Mass remaining in the Retort after this, is but in small Quantity, and this calcined yields, by Lixiviation, about ten Grains to the Pound of a fixed alkaline Salt like that of Tartar or Potashes.

Olibanum is greatly commended by many against Disorders of the Head and Breast, and against Diarrhœas, Dysenteries, and *Profluvia* of the Menses, and the *Fluor Albus*. Its Dose is from ten Grains to a Dram. It is by many esteemed a Specifick in Pleurifies, especially when epidemic.

Externally it is used in Fumigations for Disorders of the Head and against Catarrhs, and is an Ingredient in some Plaisters. It is a noble Balsam in Consumptions given in Substance, or dissolved with the Yolk of an Egg into the Form of an Emulsion. There is an Oil made of it by *Deliquium* in the same Manner as that of Myrrh. This is done by putting the Powder of it in the White of a boiled Egg in a Cellar, till it runs into a Liquor; this is esteemed a great Cosmetic and Destroyer of Pimples in the Face. *Dioscorides* had his Doubts about the internal Use of *Olibanum* in large Doses; he talks of its bringing on Madness and even Death: But none of the other Greek Writers say any thing of its ill Qualities, nor do we at present know any thing of them.

CHAPTER V.

E L E M I.

WE very improperly call this Drug Gum Elemi. It is truly a Resin, and of this Class, having all the Characters of the Resin Kind, and no one of that of the Gums. It is to be observed that we have two Kinds of this Resin in the Shops, the one genuine and brought from *Æthiopia*, the other spurious, and the Produce of *America*.

The true or *Æthiopian* Elemi, is a Resin of a yellowish Colour, with somewhat of a Cast of green and of white among it. It is hard, dry, and firm towards the Surface; but when broken, it is always found to be soft and in a Condition easily to receive an Impression from the Finger, within. We sometimes meet with it in irregularly shaped flattish Masses, but more usually in cylindric ones. Its Smell is acrid and resinous, but pleasant, and its Taste acrid and bitterish. It is very inflammable, and readily dissolves in Oil or any other fat Substance over the Fire. These two Characters alone are suffi-

cient to distinguish it from the Gums, as all the Drugs of that Class are neither inflammable nor soluble in Oil. When the Masses of this genuine Elemi are rough and irregular, they are generally uncovered or naked on the Surface, but when rolled into the cylindric Form, they are usually covered with the Leaves of a Plant of the Reed or Palm Kind. This genuine Elemi is very rare at present in *Europe*.

We are not yet acquainted what Tree it is that produces the true *Æthiopian* Elemi. Many are of Opinion, that it is of the Olive Kind, which has thus much Probability on its Side, that the Olive Trees in *Apulia*, where they grow very large, do in the great Heats sometimes exsudate a resinous Substance so like Elemi, that the Surgeons of that Country use it as such, and call it by that Name. They cure fresh Wounds with it, and use it in Fumigations, in which Case it yields a very fragrant Scent. How nearly allied this is however to the true *Æthiopian* Elemi, or how nearly the Trees agree with one another, is a Question that farther Observation alone can decide.

The spurious or *American* Elemi, which is almost the only Kind now known in our Shops, is a Resin of a whitish Colour, with a greater or less Tinge of a greenish or yellowish. It is in some Degree pellucid, and much approaches to the Nature of the Pine Resin in its Appearance. It is sometimes quite dry and friable, but more usually it is soft, and capable of receiving an Impression from the Finger. It is in this Case tough and fattish to the Touch. It is of an agreeable Smell, and of an acrid and bitterish Taste.

It is to be chosen greenish and as pellucid as may be, perfectly clean from accidental Admixtures of Sticks, Straws, &c. and of a fragrant Smell. It is brought to us from the *Brazils*, new *Spain*, and several of the *American* Islands.

The Tree which produces it is one of the *Arbores pruniferae* of Ray. It is described by *Marcgrave* under its *Brasilian* Name *Icacariba*, and in Ray's History under that of *Arbor Brasiliana Gummi Elemi fundens foliis pinnatis flosculis verticillatis fructu Olivæ figura et magnitudine*. It is a tall Tree; its Bark is greyish and smooth; its Leaves pinnated, but consisting only of two or three Pairs of *Pinnæ* with an odd Leaf at the End: Each single Leaf is like that of the Pear Tree. The Flowers are small and stand in Clusters at the Setting on of the Leaves. They are greenish, but edged with white. The Fruit contains within it a pulpy Matter of the same sweet Scent with the Resin. The *Brasilians* wound the Tree over Night, and in the Morning collect the Resin that has run out.

Elemi, on a chemical Analysis, yields a small Quantity of a limpid and insipid Water; smelling however of the Resin; after this comes a somewhat acid Liquor, and after this a limpid and reddish Oil, very fragrant, then a reddish and thick Oil like Butter in a very large Proportion. The Remainder in the Retort is not in greater Quantity than an Ounce from the Pound; and from this the most carefully managed Lixivation cannot obtain more than about six Grains of fixed Salt, and that not of the alkaline, but merely of the *Sal Salsus* Kind. There is indeed not the least Mark of any thing of an alkaline Nature in any Part of the Process.

Some have recommended the *Æthiopian* Elemi given internally as a Detergent and Diuretic. But at present the only Use made of the Elemi of our Shops.

Hoffman says it exudes by Arbores Myrobalanifera & grows in the Isle of Ceylon. The Inhabitants use it instead of Candles.

Hoffman recommends an Oil Distilled from it in Gonorrhoeas & internal Ulcers.

whether if these Insects do sometimes lodge this Matter on other Substances, they do not first collect it from the Jujube Tree here mentioned, we must rest in Uncertainty. Whatever may be the true History of this Drug, however, its Virtues are less in Dispute, it is an Attenuant, Aperient, and Diuretic, and is sometimes prescribed in Disorders of the Liver and Spleen, and in Jaundices and Dropsies. It would probably be in more use if we knew how to open its Body, so as to make it exert its Virtues. It is a Sort of unchangeable Medicine passing the Body very little altered, if given in Substance, and it is of the Number of those Things from which a Tincture is very difficultly extracted.

C H A P T E R VII.

SANGUIS DRACONIS,
Dragons Blood.

THIS is a Drug of the Class of the dry or solid Resins, though so oddly named as to seem to have at some time or other been imagined an animal Production; and we have indeed Accounts too authentic of some having been so absurd and ignorant as to suppose it so.

It is a moderately heavy Resin of a friable Texture, and of a dusky red Colour on the Surface, and indeed throughout the Mass while whole, but where powdered it becomes of an extremely bright and glowing scarlet Colour. It is naturally very dry, but it easily melts over the Fire, and is inflammable, diffusing a very singular and not disagreeable Smell while burning. If broke into small Pieces and held up against a strong Light, it is somewhat transparent. It has very little Smell, and is of an austere, resinous, and astringent Taste.

We have two Kinds of *Sanguis Draconis* in the Shops; the one Sort is very firm and compact, and is brought to us in Lumps of an Inch long or somewhat more, and about half an Inch in Diameter. These are wrapped up in certain long and narrow Leaves of a yellowish green Colour, and are called Drops or Tears of Dragons Blood. The other is brought to us in larger Masses or Cakes of an irregular flattish Figure. This is less compact than the former, and less pure; being usually fouled with Fragments of Sticks, Leaves, &c. and sometimes with Earth. This is much more friable and less resinous than the former, it powders more easily, but the Powder is not of so bright and fine a Colour. This is called common Dragon's Blood, and is greatly inferior to the former in Value.

Beside these two common Kinds of Dragons Blood, we sometimes meet with a third, which is soft, and will take an Impression from the Finger. This is very tough and viscous, and of a fine deep Blood Colour. It has the Smell and Taste of the finer dry Kind, and in keeping, it by Degrees grows hard and wholly like it. These three are all genuine *Sanguis Draconis*; but we are carefully to avoid a counterfeit Sort that is sometimes offered to Sale, and is made up of several different resinous Matters melted into a Mass, and coloured with the true *Sanguis Draconis*, or with *Brasil* Wood; this is of no value. The Dragons Blood in Drops, or the first Kind described is always to be preferred to any other.

The

It is used in Dying & making Sealing-Wax.

The a Tincture of it is much recommended by Boerhaave in his Chemistry Vol. 2. p 230.

The ancient *Greeks* were acquainted with this Drug; but they called it by a Name which has since been applied to a very different Substance; and hence has arisen great Confusion. This Name was *Cinnabaris*, a Name which not only since has been applied to a Mineral, the Ore of Quicksilver, but which was also used by many Writers of their own Time for that Purpose also. So old an Author as *Theophrastus* mentions the red Ore of Mercury under the Name of Cinnabar, and it seems that this Resin had only the same Name given it, because it approached to the Mineral Cinnabar in Colour. The later *Greeks* called it *Aima Dracontos*, that is *Sanguis Draconis*; and there were not wanting some who believed it was the real Blood of Dragons shed in the Combat of that imaginary Creature with the Elephant; and concreted as it lay on the Ground. The *Arabians* have described it under the Name of *Alachnen*. We are very well assured at present that this Drug is a vegetable Resin; but it is somewhat singular that there are four different Vegetables which afford a red Juice, which when dried is so much the same from all, that it is all indiscriminately sent over to us under the Name of *Sanguis Draconis*.

The first of these is that Species of Tree described by *Clusius* and others, under the Name of *Draco Arbor*, and *Palma prunifera foliis Yuccæ quæ Sanguis Draconis Officinarum*. This is a tall and beautiful Tree. Its Trunk is naked in the lower Part, but near the Top is ornamented with regular Branches. The Leaves are like those of our Iris's, and the Fruit round and near half an Inch in Diameter. This Tree grows in the *Canaries*, and the *Sanguis Draconis* naturally exsudates from the Cracks of the Bark of it in the great Heats. *Commelin* has described this at large in his *Hort. Amst.*

The second of them is described by *Dale* in the Supplement of his *Pharmacologia*, and named by Consul *Sherard* *Palma Amboynensis foliis et caudice, undique Spinis longis, acutissimis nigris armata*; and in the *Historia Oxoniensis arundo farcta Orientalis Sanguinem Draconis manans*. This grows to six or eight Feet high. Its Stem is as thick as a Mans's Arm: The Leaves of this are long, narrow, and encompass the Stalk at their Base. The Fruit is roundish, and of the Size of a Hazel Nut. The *Sanguis Draconis* that is the Produce of this does not flow from the Trunk, but is procured by the *Javanese* from the Fruit, by boiling, or by macerating it in the Vapour of hot Water.

The third is the *Sanguinis Arbor* or *Ezquabuitl* of *Hernandez*. This is very different from both the former. It is a large tall Tree, and has Leaves like those of Mullein, angular and pointed. This grows in new *Spain*, and a true and genuine *Sanguis Draconis* flows naturally or by Incision from the Trunk.

The fourth and last is yet more different from them all. It is described by *Commelin* under the Name of *Draco Arbor Indica siliquosa Populi folio Angsana sive Angsava Javanensibus dicta*. It grows in all Parts of the Island of *Java*, and even in the Town of *Batavia* there. Its Bark is red: Its Leaves are about two Inches long and scarce half an Inch broad. Its Flowers are small, yellow, and of a bitterish Taste. The Fruits stand on long Pedicles, and each contains about three Seeds. *Monardes* tells us, that the Figure of a Dragon is to be seen in the Fruit of the true Dragon Tree; and *Commelin* observes that this is probably the Tree he alludes to in that whimsical Assertion; for that when the outer Integument of these Seeds is taken off, there are certain irregular Lines seen running about the Fruit, which a fanciful Person may easily form the

Figure

Figure of any Animal he pleases from. The Trunk and large Branches of this Tree, when wounded, readily yield a red resinous Juice, which soon hardens in the Air, and is wrap'd up in Leaves and sent into *Europe*: This seems to be our finest Dragon's Blood in Tears or Drops.

Sanguis Draconis is not soluble in Water, but in oily Substances, or Spirit of Wine: If burnt the Fume it yields is of an acrid Nature like that of Benjamin. It is a very powerful Astringent, Incrassant, and Dryer: It is given with great Success in Diarrhœas, Dysenteries, and Hæmorrhages of all Kinds; and is much commended externally for drying and healing old Ulcers. Its Dose is from five Grains to twenty-five, but it is rarely prescribed singly; it is joined with the common Astringents in Diarrhœas, and for violent Hæmorrhages, with common Alum.

CHAPTER VIII.

CAMPHORA, *Camphire.*

CAMPHIRE is a very singular Substance, it more properly belongs to the Class of solid Resins, than to any other Part of the *Materia Medica*, yet it differs in many things from all the rest of these. We meet with two Kinds of Camphire in the Shops, differing in Regard to the Degree of their Purity: These we distinguish by the Name of rough, and refined Camphire.

The rough Camphire is brought to us in large flattish Cakes of an irregular Figure; these are not very compact, but easily crumble to Pieces; they are moderately heavy, and of a greyish or dusky reddish white in Colour; they are composed of certain small Granules loosely connected together, and are of a very quick and pungent Smell, and an acrid Taste.

The pure or refined Camphire is a fine, delicate, and pure Resin, of a perfectly clean white Colour, very bright and pellucid, moderately compact in its Texture, somewhat fattish to the Touch, and growing softish and tough under the Teeth. We generally meet with it in thin Cakes, hollow'd, and of an orbicular Figure, which they assume from the Form of the Cover of the Vessel they were sublim'd in. This refin'd Camphire is of the same Smell and Taste with the rough, but it is more acrid and pungent: It inflames the whole Cavity of the Mouth on chewing only a small Piece of it, and yet at the same Time impresses a Sense of Coldness on it: Its Smell is somewhat like that of Rosemary, but vastly stronger: It is more volatile than any other of the vegetable Resins, insomuch, that if left exposed to the open Air, it will by Degrees fly wholly off: It also is very inflammable, and when once set on Fire, burns wholly away without leaving any Remainder.

The rough Camphire is not fit for medicinal Use, but the refined only is to be admitted into the Shops, and that is to be perfectly white, clear, and pellucid, which are the Proofs of its having been well refined.

Camphire was unknown to the antient *Greeks*: The *Arabians* have described it under the Name of *Caphur*, and the modern *Greeks*, *Aëtius* and the rest, under that of *Caphoura*. It is brought to us from *Japan*, and the adjacent Islands; it is all of it sent over rough into *Europe*, and the *Hollanders* are the People who refine the greatest Part of it.

The

Hoffman calls Camphire a fine Volatile Coagulated Oil.

Neuman says that a substance like Camphire in all respects except of Smell may be got out of Wild Thyme. Philos. Transact.

In the History of Japan, Lampfer gives this Account of its
Preparation.

The *Indians* distinguish two Kinds of Camphire, a finer, and a coarser; the finer is the Produce of *Borneo* and *Sumatra*, it is rare, and of a great Price among themselves, and is never sent into *Europe*; the coarser is the *Japonesse* Kind, which is the common Kind both in the *Indies*, and in *Europe*.

The Tree which produces our Camphire is one of the *Enneandria Monogynia* of *Linnaeus*, and one of the *Arbores fructu Calyculato* of *Ray*. It is described by *Breynius* in his *Prodromus* under the Name of *Arbor Camphorifera Japonica foliis laurinis fructu parvo globoso Calyce brevissimo*, and by *Linnaeus* in his *Hortus Cliffortiana*, under that of *Laurus foliis ovatis, utrinque acuminatis, trinerviis nitidis, petiolis laxis*.

It is indeed truly a Species of Bay Tree, but it grows to the Height and Size of our Oaks: The Trunk is thick, and its Bark greyish and crack'd; that on the younger Branches is green and smooth. The Wood is white, and of a lax Texture; it becomes a little reddish in drying, and is variegated with black in the manner of the Walnut-Tree; it is also of a very agreeable and pungent Smell: The Leaves are like those of the common Bay, but longer and somewhat narrower; they end in a narrow Point, and are curl'd about the Edges; these when bruised smell strongly of Camphire, as does also every Part of the Tree: The Flowers stand in Clusters, on Pedicles that arise from the *Axæ* of the Leaves, they are small and white; these are succeeded by Berries of a round Figure, as big as a small Pea, standing in little Cups, and of a middle Taste between that of Cloves and Camphire. Every Part of this Tree abounds with Camphire, but it is not collected from it in the manner of the other Resins, but by a sort of chemical Process. The Natives of the Places where the Trees grow, cut the Wood and Roots into small Pieces, and put them into large Copper Vessels, which they cover with earthen Heads fill'd with Straw; they give a moderate Fire under them, and the Camphire is raised in Form of a white downy Matter and retained among the Straw; when the Process is over they shake it out of the Straw, and knead it with their Hands into Cakes, which are what we call rough Camphire.

The *Dutch*, who refine this Camphire, beat these Masses to a rough Powder, and sift them through a coarse Sieve, by which means they free them from the coarser Foulnesses that were mix'd among the Camphire; they put two or three Pound of this powder'd Matter into a flat glass Vessel with a narrow Neck, they then place the flat Bottom of this Vessel upon Sand, but they do not raise the Sand about it. The Sand-Furnace used for this Purpose, is of a peculiar Structure; the Vessel which holds the Sand is of Iron, and its Figure is that of an inverted Cone; they make a Fire about the lower narrow Part of it, which they encrease, till the Camphire in the Glass boils like Water; they hang Cloaths over the Body of the Vessel while the Camphire melts, and cover its Top with a loose Cone; when the Camphire boils thoroughly they take off some of the Coals, and throw Ashes over the rest to diminish the Fire, and in this moderate State they keep it half an Hour; they then take off the Rags and the Cone, and only hang on a Piece of brown Paper pierced in the Middle in the same manner as the Rags were, to let it fall over the Neck to the Body of the Vessel; they then put a Paper Cone over the Mouth of the Vessel, and in this State they keep it over a gentle Fire for some Hours, keeping the Heat up to such a Degree that the Camphire still remains in Fusion; by this Part of

the Process the Camphire is divested of a thin Oil, and some other of its less firm Parts, and becomes capable of concreting into a harder Mass that it otherwise could.

After two or three Hours continuance of the Heat in this State, they encrease the Fire, and raise it to that Degree that the Camphire begins to rise towards the Top of the Vessel; great Caution is required, at this critical Time, in the Management of the Fire, to prevent the Camphire's rising too suddenly into the Neck of the Vessel, and filling and bursting it. They not only are careful of the Degree of Fire on this Occasion, but they continually thrust down an Iron Instrument through the Neck into the Body of the Vessel to keep a clear Passage; the Camphire by Degrees rises wholly to the Top of the Glass, they then let the Fire go out and the Vessel cool; when cold they break it and take out the Camphire, which is found in Form of a Cake, adhering to the upper Part of the Vessel and conforming to its Shape; if there were any Foulnesses left among the Camphire after the sifting, they are found at the Bottom of the Vessel, the Camphire is pure at the Top, and is what we see in the Shops.

The *Borneo* and *Sumatra* Champhire, so much esteem'd in the *Indies*, is very like ours, but it differs in Form, consisting wholly of little *Mica*, or Spangles of a bright silvery Colour, or of thin and flat Flakes or Scales. The Tree which produces it is of a different Genus from that whence we have our Camphire. It is call'd by *Breynius* in his *Prodromus*, *Arbor Camphorifera Sumatrana, foliis Caryophylli aromatici longius mucronatis fructu majori oblongo, Calyce amplissimo Tulipæ figuram quodammodo repræsentante*. It much resembles the common Camphire Tree in its external Form, but it is smaller: Its Trunk is slender, jointed like a Reed, and full of a Pith like that of Elder: Its Wood is slight and spongy: Its Fruit is very different from that of the former, being of the Bigness of a small Filbert, of an oblong Figure, and cover'd with a thin Rind; over which it has, in the manner of the Filbert, a large Cup which covers it, and which resembles the Flower of the Tulip in some Degree, being variegated with red, yellow, and green, and making a very beautiful Appearance; this opens at the Top and discloses the Fruit, which is of a very agreeable Taste, but has a slight Flavour of Camphire. The Islands of *Borneo* and *Sumatra* produce this Tree, the greatest Plenty of it is in the Woods towards the *Western* Coasts of the latter Island.

They do not boil the Wood of this Tree for the Camphire, but they find it in Form of a solid Resin concreted in different Parts of the Tree, in the thin Flakes and Spangles above mentioned. It is not every Tree that is in a State to produce the Resin in this manner. The Natives guess which, as they stand, seem most likely to have it, these they fell and cut, and split to Pieces, picking out the Camphire wherever they find it: This Camphire has not the Property of evaporating of itself, on being expos'd to the Air, as our Camphire has: It is highly esteem'd, and sold on the Spot at a vast Price.

Camphire fir'd in the open Air affords a small Quantity of a black Smoak, which has however nothing acid in the Smell, and in this it differs from Benjamin, and many other of the Resins: If distill'd in close Vessels it is not separated into its Principles, but rises wholly into Flowers in the manner of Sulphur: It dissolves very readily in rectify'd Spirit, and in oily Liquors, as the other Resins do; but after Solution in Spirit, if the Liquor be debas'd by
adding

It is chiefly found in Cavities formed by Nature between the Bark & Wood of the Tree -
under a Crystalline form; The fine large bright Pieces are picked out, & sold at a great price
& sent to China; Where though the other sort abounds, yet this is sold at 2 or 3 Guineas a pound.
The Value it bears is owing to its quality of preventing animal Substance from putrefying, on which
score it is employed for embalming the Dead -

It is dissolved in a Watery Menstruum by of Yolk of an Egg, or by Mucilage; setting
on fire to impregnate of Water with it is both an unfrugal & ineffectual method.
Newman. p. 322.

The best way to obtain a Watery Solution of it, is to grind it with Almonds
in the Proportion of about 4 Scruples of Almonds, to half a Dram of
Camphire.

Nam ad Resinam Camphorae ut referenda merito dubitamus. Nulla enim Resinarum Genera accendit
tota in auras volant; ne ulla datur Resina quae vase clauso & Ignem tota in altum elevetur.
Praeterea nulla ex Resinis nobis Cognita fit, quae tam prompte insignem quantitatem Spiritus Vini R.
recipiat & absorbent, quam Camphora, cujus pars Una a duabus Sp. Vini rectificatis partibus dissolvitur.
Hoffmanni Dissertatio de Camphorae interno Ufu.

Newman says that 4 oz. of Spirit of Wine will dissolve three oz. of Camphire.

& essential Oyls, by rising by the means of heat in its whole Substance without Analysis
or decomposition -

The liquid Phosphorus is prepared from Phosphorus 1 part & ten Parts of Camphire, w^{ch} being
beat together well in a Mortar are then dissolved in Oyl of Cloves, w^{ch} w^{ill} any ones Cloath. or
Skin may be rubbed in order to make y^e have a Luminous Appearance, wth out any
Danger of Burning.

a gentleman swallowed 3j of Camphire, w^{ch} brought on a dimness of his Eyes, &
a staggering as he walked, & other symptoms w^{ch} made him apprehend an
Apopleptic Attack, but these effects soon went off of themselves why it or how was
Disorder p. 366. R -

Hoffman mentions two scruples being taken by Mistake for dose, w^{ch} caused a Spasmodic Disorder
of the Oesophagus.
Whoever has a mind to be further informed of the Medicinal Uses of Camphire, should Consult
Hoffmann's Dissertation on that Subject.

adding Water to it, the Camphire separates, and rises in its own Form to the Surface like Flocks of Wool, or Fleeces of Snow. One very singular Property Camphire has, which is, that it is dissolved by Aqua Regia, Spirit of Nitre, or the other strong Acids, which shews its Difference from all the other Resins, for they are all indurated by these Liquors. It will be dissolved also by concentrated Oil of Vitriol, but in this Solution it is not form'd into an Oil; it melts also in Spirit of Salt, and partly runs into a thick and tough whitish oily Fluid, and in part is sublim'd: The fix'd and volatile Alkalis, as Salt of Tartar, and Spirit of Sal Armoniac, have no Effect upon it; whence, as from many of the other Experiments, it appears to be very different from all the other Resins.

There have been great Disputes among the medical Writers on the Subject of the Virtues of Camphire, some have declar'd it to be cold, others hot; they argue for its being cold from its abating Venery, and being good against Inflammations of the Eyes; those who argue for its being hot produce in their Favour its acrid Taste, its fragrant Smell, its Inflammability, and the great Subtlety and Volatility of its Parts.

The Opinion of its being an Enemy to Venery, has been very universally received, and its Vapour has been declared sufficient to disable Men: But a thing is not the more true for being generally received: The Workmen in the *Indies* who prepare the Camphire, and those whose sole Employ in *Holland* is in the Houses where it is refined, seem as much addicted to Venery as other Men, and have generally Families of Children: It is affirm'd indeed, that among the People who have taken Camphire by way of extinguishing those Desires, some have succeeded, but it is not less certain, that others have complained of greater Excesses of their Desires that Way, from the taking it, than they had before. Camphire, upon the whole, seems of the number of those which we call hot Medicines, and wherever it has been observ'd to act as a cooler, it may be found to have been only by Accident, by attenuating and resolving the Humors, which stagnating, caused Inflammation, and therefore occasioning the going off of the Heat and Pain by taking away the Cause; not by acting itself as a cooler, which is an Effect that we daily experience from other Medicines of the hotter Kind, as Spirit of Wine, &c.

Camphire is at present much used in Medicine, both internally and externally; internally it is anodyne and diaphoretic, and a great Resister of Putrefaction: It also promotes the Menfes and Urine, and is good in Ulcerations of the Kidneys and Bladder: It is by some greatly recommended also in the *Fluor Albus*, and in Gonorrhœas; at present it is often given in violent Deliriums, and even in Madness itself, and also in hysteric Complaints: Its Dose is from two or three Grains to a Scruple. Externally it is used in Pains of the Limbs, in Erysipelas's, and even to abate Inflammations of almost all Kinds, under proper Management: It is also an Ingredient in many of the Shop Compositions.

Beside this Camphire, there is a similar Substance drawn from many of the *Indian* Trees and Plants, much resembling it in Appearance, and in its Virtues. The Island of *Ceylon* abounds in Cinnamon Trees, and the Natives make a large Quantity of a kind of Camphire from them; they strip off the Bark of the Roots of these Trees, and put it into an Alembic with a large Quantity of Water; they distil this in the common Way, and the Camphire is found

concreted at Top of the Water ; this is call'd Cinnamon Camphire, it has a Fragrancy greatly superior to the common Camphire, and is said to excel it in its Virtues, but little of it is made however, and that is sold at a large Price. In the same manner different Kinds of Camphire may be made from all the Species of the Canella, from the Root of the *Ceylon* Zedoary that smells of Camphire, from the *Ceylon* Mint, from Schænanth, and many other Plants, nay from our own Sage, Thyme, and several other of the *European* Aromatics, but these in general are obtained at best but in very small Quantities, and are most of them greatly inferior in Virtue to common Camphire.

Of SOLID RESINS,

Less frequently used in MEDICINE.

CHAPTER I.

ANIME.

THE Anime of the Shops is of the number of those dry Resins, which are very improperly call'd Gums, what is call'd Gum Anime being a friable Substance, inflammable, and soluble in Oil, which are Characters of a genuine Resin, and such as no Gum can possess. We are to observe also, that there is another very frequent Error in Regard to this Drug, which is, that many call it Copal, and confound it with another Resin, improperly call'd also a Gum, and known by that Name. Copal is indeed a Term used by the *Indians* in a very large Sense, and sometimes as a generical Name for all the scented Resins ; but with us it is never used so, nor has any good Author used it as a Term synonymous with Anime : It is the Name of a distinct Resin to be treated of in its Place.

The *Spaniards*, according to *Hernandez*, used the Term Copal to distinguish all the white, or whitish sweet scented Resins ; and the Term Anime, which they also made generical, to express all the brown ones : After this the Name Anime became attributed to a peculiar Resin, of a sweet Scent, and of a brownish yellow Colour, brought from the *East*, or rather from *Ethiopia* on the Confines of *Arabia* ; and finally after this, the *Portuguese* gave it also to certain sweet Resins which they found in the *Brazils*, and esteem'd somewhat of the same Nature with the *Ethiopian* Anime.

On this Distinction has been founded the Name of *Oriental* and that of *Occidental* Anime, long known in the Shops, and distinguishing two different Resins at this Time found there, though neither very frequently.

The *Oriental* or *Ethiopian* Anime, call'd by the *Portuguese* *Animum* and *Ani-mum*, and in the Shops Gum Anime, is a dry and solid Resin, brought to us in large Cakes or Masses, of an irregular Figure, and of a very uncertain Colour ; some of them are greenish, some reddish, some brown, and some of the Colour of Myrrh ; they all agree in this however, that they are moderately pellucid,

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It dissolves totally in Spirit of Wine, the impurities only being left, which amount to no more than about 5 Grains in an ounce.

pellucid, of a tolerably compact Texture, light and easily powdered, of a fragrant Smell, very inflammable, and of a resinous and somewhat bitter Taste. This which is the genuine and true Anime is now very rare in the Shops. It is brought, as *Garcias* informs us, only from *Æthiopia*, but the *Occidental* Kind, or Resin of the Courbaril, is what is universally received in its Place. It has been supposed by many, that this *Æthiopian* or true Anime was known to the ancient *Greeks*. Some have supposed that *Dioscorides* meant this Resin by the Name of *Myrrha minima*, and many Arguments have been advanced in Favour of the Opinion; but the Resins themselves are so like one another, and the Descriptions the *Greeks* have left us of them so short and imperfect, that it is impossible to affirm any thing on this Head with any tolerable Degree of Certainty. We are not yet informed what the Tree is that produces the *Æthiopian* Anime. *Herman* is of Opinion, that it is the same that yields the *Occidental* Kind, only growing in a different Climate, but this is no more than a Conjecture.

The *Occidental* Anime is a whitish, dry, and solid Resin, somewhat resembling Frankincense in Colour. It is often of a fine yellowish white, between that of Frankincense and Mastich, and in the purest Pieces is very clean and transparent; in general however it is much inferior to the *Oriental* in these Respects. It is moderately heavy, friable, and somewhat oleaginous to the Touch. It is extremely fragrant, especially when burnt, and is of a resinous, acrid, and somewhat bitterish Taste. It is brought to us from many Parts of *America*, particularly from new *Spain* and the *Brasils*. The Natives call it *Joticacica* and *Jetaicica*. Our People from their Name of the Tree vulgarly call it Resin of Courbaril.

Whatever might be the Case in regard to the *Æthiopian* Anime, we may be very well assured, that this was not known to the *Greeks*. The Tree which produces it is one of the *Arbores filiquosæ* of Mr. Ray. It is described by *Caspar Baubine* under the Name of *Arbor filiquosa ex Virginia lobo fusco scabro*, and by *Plumier* under that of *Courbaril bifolia flore pyramidato*. It grows to a very great Height; its Wood is solid and of a fine Grain, of a reddish Colour and very durable, and serves them for many of their better Works. The Leaves are like those of our Bay Tree but thicker, and they grow constantly two together on every Stalk; they are of a shining green, and if held up to the Light seem to be perforated with innumerable little Holes in the Manner of the Leaves of St. John's-wort. The Flowers stand in Clusters or Tufts towards the Tops of the Branches; they are of the papilionaceous Kind, like those of our Vetches, and of a purplish Colour: These are succeeded by a Kind of Pods six Inches long, and an Inch and half broad, compressed sideways, and raised into two Ridges on the Back. This Fruit when ripe does not open lengthwise into two Valves, as the Generality of Pods of this Shape do; it remains entire, and contains in it among a Multitude of irregular Fibres four or five Seeds larger than the common Pine-Kernels, otherwise like them. This Tree is common in most Parts of *America*, and the Fruit ripens in *May* and *June*, when it falls from the Trees, and is picked up by the Natives, who are fond of the farinaceous Substance that is among the Fibres within it. The Trunk of the Tree exsudates the Resin here described in very consider-

able Quantity without being wounded for it; the finest Lumps of it are white or of a pale yellow, and much resemble Amber.

The *American Anime*, analysed by Distillation in a Retort, yields first a small Quantity of a limpid Phlegm of a subacid Taste, and of a Smell not disagreeable, but much resembling that of Oil of Juniper; after this a small Quantity also of a reddish Liquor more acid than the former, and then of a brown Liquor of an empyreumatic Smell; after these there comes over a moderate Portion of a fine yellow pellucid Oil, and then a thick and brown one like Butter, in so large a Quantity as nearly that of two Thirds of the Weight of the whole. The Remainder in the Retort is but in very small Quantity, and after Lixivation, yields, with the utmost Care, only about four Grains of a fixed Salt, and that of the *Sal Salsus*, not the alkaline Kind, from the Pound.

The Natives of *America* use this Resin in Fumigations for the Head-ach, and for Diseases of the Breast and Lungs. They also use it externally dissolved in Oil as a Liniment, and in Spirit of Wine as an Embrocation for Pains in the Limbs.

CHAPTER II.

COPAL.

THE Copal of the Shops is truly a Resin, being inflammable and soluble in Oil, but it has the Fate of the *Anime* and some other Bodies of this Class to be miscalled a Gum. It has been observed in the preceding Chapter, that the *Anime* and Copal are by some confounded, and the two Names used as synonymous, and that the *Americans* use the Word Copal in a much larger Sense, expressing by it all the scented Resins; and the *Spaniards* of that Part of the World, as many of them as are of a whitish Colour.

Beside these larger and less distinct Senses, the Word Copal is however used in the Shops as the Name of a distinct Resin, and as such is to be considered in this Place. The true Copal is a solid Resin of a considerably firm Texture. It is brought to us in moderately large Masses, or in single large Lumps or Drops. These last are the purest Copal, and are usually very clear and transparent, of a watery Colour, or of an extremely pale yellow. They greatly resemble Amber in Appearance, and if there were any such thing as Amber of this limpid Hue, they would not be easily distinguishable from it. This Resin is of a fragrant Smell, especially when fresh broken, or when burnt. Its Taste is subastringent and somewhat aromatic.

There are several Trees in *South America*, which produce a Resin so like in all Respects that it is indifferently collected from them all, and sent to *Europe* as well as used upon the Spot under the Name of Copal. *Hernandez* has enumerated and described no less than eight of these Trees; there is one however which yields the Resin in greater Plenty, and in a greater Degree of Purity than the rest, and is therefore generally called the true Copal Tree. This is described by *Hernandez* under the Name of *Copalli Quabuitl*, and *Copallifera prima*. It is a tall and large Tree with Leaves not unlike those of the *European Oak*, but somewhat longer, its Fruit is round and of a purple Colour. The Trunk of this

Tree

tho differ' remarkably from most of them, in its being exceedingly difficultly soluble
in Spirit of Wine,

tho' the solution of it, is kept a secret, tho' Sanchez says it readily
succeeds, if Spirit of Sal Ammoniac mixed with a due Proportion of
Oil of Spike or Turpentine, is used for the Menstruum

Tree yields the Copal sometimes spontaneously, but more plentifully when wounded for that Purpose.

Copal, by a chemical Analysis, is found to yield first a moderate Quantity of an acid reddish Phlegm, of an empyreumatic Smell; and after this a moderate Portion of a yellow, thin, and transparent Oil, then a larger Quantity of a reddish and somewhat thicker Oil; and after this a very large Proportion of a thick blackish Oil like Butter. The Remainder in the Retort, after these several Liquors are come over, is not more than an eighth Part of the Refin first put in; and this calcined in an open Fire, is reduced to a much smaller Quantity; after which, by Lixiviation, it yields about four Grains of fixed Salt from the Pound of Refin originally employed, and that is not of the alkaline but of the *Sal Salfus* Kind. The *Americans* use Copal as they do Anime for Disorders of the Head, by Way of Fumigations. We do not use it at all in Medicine, but an excellent Varnish is made of it.

CHAPTER III.

CARANNA.

CARANNA is a vegetable Product, by some, like the two former, called a Gum; but its Inflammability and Solubility in Oil or other unctuous Substances, prove that it is truly a Refin. It is a dry and friable Refin as we usually meet with it, but when fresh it is somewhat soft, and will receive an Impression from the Finger. It will remain of this Consistence a Twelvemonth, or if properly kept much longer, but afterwards it becomes as firm and solid as any of the other Bodies of this Class. It is brought over to us, rolled up into little Masses of a cylindric Figure, and covered with the Leaves of a Plant of the Rush Kind. It is of a dark greyish Colour, almost black on the Surface, and when broken appears of a dusky brown within. It is of a somewhat fragrant and aromatic Smell when fresh broken, but much more so when thrown on burning Coals, on which it melts and flames diffusing a very grateful Odour throughout the Room. Its Taste is resinous, aromatic, and has somewhat of the peculiar Bitterness of Myrrh in it. It is to be chosen clean, of a dark Colour and bitterish Taste. It is brought to us principally from new *Spain*. *Monardes* tells us of a Kind of *Caranna* very fine, and as pellucid as Crystal. *Geoffroy* observes that this Kind is not met with in our Shops. But from the whole that *Monardes*, who has mentioned it in two or three different Places, says of it, it appears that he meant no other than the finest Kind of Copal by that Description.

The Tree which produces the Caranna is described by *Hernandez* under the Name of *Flakuciloca Quabuitl, id est arbor insanie Caragna nuncupata*, and by *Monardes* under that of *Caranna*. It is a large and tall Tree, full of Branches, covered with a yellowish brown Rind. Its Leaves in Shape resemble those of the Olive, and its Fruit according to *Herman* is round, and resembles a small Apple.

This Refin affords by Distillation a fine, thin, limpid, and odoriferous Oil, which is esteemed, as well as the Refin itself, a very powerful external Remedy in Cases of Pain, Tumours, and Wounds of the Nerves. It is even used
by

by some in the Gout and Sciatica. it is made into a Plaister with the Addition of *Chio* Turpentine and Oil of Mace, which is applied to the Stomach in Cases of Indigestions, and to the Head for the Cure of inveterate Pains there, but with how much Success we are not able to say.

CHAPTER IV.

TACAMAHACCA,

Tacamahac.

TA C A M A H A C is another of the Refins, improperly called by the Name of a Gum in the Shops. It is a tolerably solid Refin of a very fragrant and peculiar Smell: It is divided by the Druggists into two Kinds, the one called the Shell Tacamahac, which is the finest, the other, which is an inferior Kind, Tacamahac in Grains, or rough Tacamahac.

The Shell Tacamahac is a concreted Refin, of a fatty Appearance, and somewhat soft, so as easily to receive an Impression from the Finger; at least this is its State when tolerably fresh. In Time it grows hard and friable as common Refin, but it is then to be rejected as having lost great Part of its Virtue. It is of a pale brownish white Colour, sometimes with a yellowish, sometimes with a greenish Cast. It is moderately heavy, very inflammable, and of an extremely fragrant Smell of a peculiar Kind, in which something like the aromatic Scent of Lavender and the Perfume of Ambergrease may be distinguished as mixed with a resinous Flavour. Its Taste is very aromatic and agreeable, though considerably acrid. It is sent over to *Europe* in the Shells of Gourds or Calabashes, and thence has the Name of Shell Tacamahac, but it is at present scarce any where to be met with in the Shops.

The common or Grain Tacamahac, called also coarse Tacamahac by way of Distinction from the former fine Kind, which is called *Tacamahaca sublimis* by some, is a dry, but somewhat fattish Refin, sent over to us either in loose Granules, or in Masses formed of such. It is of a whitish Colour, variegated with yellowish, reddish, or greenish. Some of the Granules are simply of one or other of these Colours; others are variegated with two or more of them. It is of a fragrant Smell resembling that of the Shell Tacamahac, but less perfumed, and is of an acrid, aromatic, and bitterish Taste. The Ancients were wholly unacquainted with this Drug. We owe the Discovery of it to the *Spaniards*, who first sent it into *Europe* from their Dominions in *America*. Since which Time it has been found also in other Parts of *America*, and in the Island of *Madagascar*.

The Tree which produces Tacamahac is described, though but imperfectly, by many of the botanical Writers. *Caspar Baubine* calls it *Arbor populo similis resinosa altera*, *Hernandez Tecomahaca*, and *Plukenet Tacamahaca foliis Crenatis ligno ad Ephippia apto*. It is a tall Tree, in the Manner of Growth much resembling the Poplar. Its Leaves are broad, serrated at the Edges, and terminate in a sharp Point. The Flowers have not yet been described, but the Fruit is said to grow on the Summit of the Branches, and to be small, roundish, and of a brown Colour, containing a Kernel not unlike that in the Peach Stone. This Tree in the great Heats naturally exsudates a fine whitish

It dissolves totally, if pure, in rectified Sp^t of Wine

- Multae sunt myrtae Arenalae, eo quod arbores in Arenalio Louis crevant. Hoffman. de Balsam. Medicam.

Resin in large Drops; this is the finest and most fragrant Tacamahac. The Natives wound the Bark also in several Places, and from these Incisions procure a large Quantity of the Resin, but of an inferior Value.

Tacamahac, distilled by the Retort, yields first a fine fragrant Phlegm, of a subacid Taste, and afterwards more which is less scented and more acid, the Quantity of the whole amounting to nearly two Ounces from the Pound; after this there comes over about half that Quantity of a fine pellucid and fragrant reddish Oil; then a thick brown Oil like Butter in no less Quantity than six Ounces or more from the Pound; and after this a smaller Quantity of a yet thicker and darker Oil. The remaining Matter in the Retort is small in Quantity, not more than an Ounce and a Quarter from the Pound; this afterwards calcined in an open Fire is reduced to half a Dram in Weight, and from this not the least Particle of fixed Salt can be drawn by Lixiviation.

Tacamahac is greatly commended by some in Disorders of the Breast and Lungs: At present it is very rarely used internally: But externally it is in Repute for softening the Tumors and mitigating Pain. It is spread on Leather, and laid behind the Ears to cure the Tooth-ach, and to stop Defluxions on the Eyes, and to the Navel to relieve Women in hysteric Complaints. Applied in the same manner to the Region of the Stomach, it is said to assist Digestion, dispel Flatus's, and promote the Appetite. It is also an Ingredient in some of the Compositions of the Shops.

CHAPTER V.

LADANUM,
Labdanum.

LABDANUM, or Ladanum, as it is variously written, is a Resin of the softer Kind, though too firm in its Consistence to be ranked among the fluid ones. We meet with it of two Kinds in the Shops, the one in Cakes or Masses of an irregular Figure, the other twisted up into a Sort of oblong Rolls. The Ladanum in Masses of irregular Figure is usually of so soft a Consistence as to receive an Impression from the Finger, or at least so soft as to give way upon Pressure; and it grows yet softer and more ductile as it is handled. It is of a dark Colour, approaching to blackish, considerably heavy, of a tough Consistence, of a strong and not unpleasant Smell, and of an aromatic but not very agreeable Taste. This Kind is usually sent over to us in Bladders, or carefully wrapped up in Leather to preserve it in its genuine soft Consistence, and to prevent the Evaporation of its finer Parts.

The Ladanum in Rolls is very different from, and much inferior to this. It is dry and hard, but if held to the Fire it softens a little. Its Colour is darker than that of the other Ladanum, and its Smell of the same Kind, but much more remiss in Degree. This is the Ladanum most frequent in the Shops, but it is foul, often containing Sticks and Straws, and often Dirt and Sand, and is greatly inferior to the former in its Virtues.

Ladanum is to be chosen soft and moist, of a strong Smell, pure and free from accidental Admixtures, very inflammable, and diffusing a fragrant Smell while

while burning. It is brought to us from the Island of *Crete* and some other of the neighbouring ones.

The *Greeks* were very well acquainted with Labdanum, they called it *Ladenon*, and the *Arabians* make frequent Mention of it under the Name of *Laden* and *Loden*. The Shrub which produces it is one of the *Polyandria Monogynia* of *Linnaeus*, and one of the *Herbæ pentapetalæ foliis in Caule ex adverso binis* of *Ray*. It is of the *Cistus* Kind, and is described by all the late botanical Writers under the Name of *Cistus Ladanifera Cretica flore purpureo*. It is a low Shrub spreading itself on the Ground and rarely rising to more than two Feet in Height. Its Root is a Foot or more in Length, white, woody, and covered with a reddish Bark. Its Leaves are of a dusky green Colour, of an oblong Figure, and notched at the Edges. The Flowers stand on the Tops of the Branches, and are of a fine purple Colour, as large as a small Rose, but single. The Seed-Vessel that succeeds these is divided into many short Pods.

The Ladanum of the Shops is a resinous Juice, which exfudates from the Leaves of this Shrub. It was collected in the Time of *Dioscorides* in two different Ways; the Goats which fed on the *Cistus* used to come home with their Beards and Legs loaded with it, as they had rubbed it from the Plant; and this the People who had the Care of them used to take off with proper Instruments, and to put up in Vessels for Sale. The other Way was to draw Ropes and other Things over the Shrubs, and afterwards to collect the Labdanum that had adhered to them. The People who had traded in this Drug, used therefore always to distinguish two Kinds of it, that collected from the Beards and Legs of the Goats, and that immediately from the Shrub.

Of later Times however, all the Ladanum is collected in one Way, which *Bellonius* described when on the Spot, and which *Tournefort*, when afterwards there, confirmed. They make a Kind of wooden Rake but without Teeth, and to this they fix a Number of long Thongs of untanned Leather. With this Instrument they collect the Ladanum during the Heats of the Day, by drawing it several Times over the Shrubs. They afterwards scrape off the Resin from these Thongs, and put it up for Use. The proper Season for this Business is in the Dog-Days in the serenest Weather, and when there is no Wind. It is an intolerable Fatigue to be upon the Mountains exposed to such Heats; the Peasants only undertake it; but they are well paid for it, since a good industrious Fellow will collect three Pound Weight or more of Ladanum in a Day. If it is collected in windy Weather, it is of much less Value, as it is always full of Dust and Foulness: What is collected pure is indeed seldom sold so, the Peasants who sell it by Weight to increase their Profit, usually mixing a Quantity of a dusky coloured heavy Sand among it.

Ladanum, distilled by the Retort, yields first a little more than an Ounce from the Pound, of a reddish Phlegm, of an agreeable Smell, and of an acid Taste; after this comes over about a fourth Part of that Quantity of a brown alkaline Liquor; then much about the same Quantity with the last, of a fine, pellucid, reddish Oil of a very fragrant Smell; then three times as much of a brown empyreumatic Oil. The Mass remaining in the Retort after this, is vastly greater than that usually remaining after the Analysis of Bodies of this Kind. This calcined in an open Fire is soon diminished to a much smaller Quantity; but this when examined proves to be only the Sand that had been

From 3xvj of Labdanum, may be obtained by Spirit of Wine 3xij 3ij Dij of
Resin is the Remainder yielded with Water 3i of Gummy Extract;

Extrahitur ex Sp. Vini Resina purissima, quae vel Liquida vel in Solidam formam redacta.
roborante nervino Effectu Splendet, cujus Usum in Continacibus Cephalalgis non sine
Efficacia Expectari est Hoffmannus. Syntaxis de Medicament. Balsamicis

been mix'd with Ladanum, and not the least Particle of fix'd Salt, of any Kind, can be obtained from it by Lixiviation. The Quantity of Sand thus discovered among the Ladanum, is often not less than twelve Ounces in the Pound in the twisted Ladanum; in the finer Kind it is in much less Quantity, but even there very considerable.

The *Grecian* Women are very fond of Ladanum, they make Balls of it with a small Mixture of Ambergrease, which they carry about them by way of Perfume. In Medicine it is used externally, to attenuate and discuss Tumors: Internally it is more rarely used, but it is greatly extol'd by some against Catarrhs, and in Dysenteries: Its Dose in these Cases is from five grains to thirty: It has been made an Ingredient in several of the old Compositions of the Shops, but is at present much disused.

CHAPTER VI.

RESINA SANDARACHA,
Sandarach Resin.

BEFORE we enter on the History of this Resin, we are to observe, that there are two other very different Substances, call'd by Authors by its Name; the one a mineral, the other an animal Production; the mineral Sandarach is an inflammable Fossil of the Orpiment Kind, and call'd by some red Orpiment; this has been described in its Place. The animal Substance, call'd by this Name, is a Matter found in the Hive of Bees, and at this Time known by the Name of Bees Bread. The vegetable Resin, call'd Sandarach, is a dry and hard Resin: We usually meet with it in loose Drops or Granules, which are of the Bigness of a Pea, or a Horse-Bean, or larger; of a pale whitish yellow in Colour, transparent, and of a resinous Smell; brittle, very inflammable, and diffusing a very pleasant Smell while burning; in Taste it is somewhat acrid and aromatic. It is soluble in Spirit of Wine, or in oily Substances: We receive it chiefly from the Coast of *Africa*.

The Tree which produces it is one of the *Diacia Monodelphia* of *Linnaeus*, and of the *Arbores florea fructa remoto Baccifera* of *Ray*. It is described by all the botanical Writers under the Name of *Juniperus arborescens* or *Juniperus Arbor*, some of it is also obtained from the *Cedrus Baccifera* of Authors. It flows from these Trees only in the hot Countries, and there naturally in some Plenty, but the Natives usually promote the Discharge of it, by making Incisions in the Bark: What is obtained from the *Cedrus Baccifera* is more fragrant, especially when burnt, and is therefore the more esteem'd by some, but it is seldom to be met with separate in the Shops, both being mix'd together under the common Name of Sandarach. These Trees are both Evergreens, but they are very different in many other Respects. The *Juniperus Arbor*, from which the far greater Part of the Sandarach we use is produced, is only distinguishable from the common Juniper in Size. It sometimes grows in Form of a very thick and large Bush, rising to a considerable Height, but full of Branches down to the Ground; sometimes it rises in Form of a Tree, with a naked Trunk and tufted Head, its Trunk in this Case however never is very thick: It is cover'd with a thin Bark, and its Wood is firm, well scented,

and somewhat reddish when dry. The Branches in both Cases are divided into numerous Twigs, and these thick set with narrow oblong Leaves of a fine shining green; from the *Alæ* of these there grow little Catkins or Juli of a purple and yellow Colour, which are the Male Flowers: The Berries grow on other Trees, and are round and of the Size of a Pea, or larger; these do not ripen till the second Year. All the Parts of the Juniper are resinous and well scented, but the Tree though frequent in all Parts of *Europe*, never affords any of its Resin in the colder Countries.

The other Tree which produces the Sandarach, call'd the *Cedrus baccifera*, *Cedrus folio Cupressi fructu flavescente*, and *Oxycedrus Lycia* by *Dodonæus*, is a small Shrub, rarely growing to more than seven or eight Feet high: Its Bark is rough, its Stem rarely strait, but usually variously contorted: Its Twigs very flexile, and its Leaves very like those of the Cyprus: The Flowers are like those of the Juniper, but they grow only on the Summits of the Branches; the Berries grow on other Parts of the same Branches; they are of the Size of Myrtle Berries, or larger; they are roundish, but have some Prominences on their Surface; they are green at first, but afterwards of a yellowish red; and are soft when ripe. The first Leaves of this Shrub are unlike the others, they are of the Juniper Leaf Kind, and are prickly; the others are like those of the Cypress; the whole Shrub is scented in the manner of the Juniper, but more pleasantly. It grows in many Parts of *Europe*, but will not afford any Resin except in the same hot Countries where the Juniper does: It is there wounded in the Trunk and larger Branches for it, and what is produced so is mix'd with that of the Juniper.

Sandarach, on a chemical Analysis, is found to approach very much to the Nature of Mastic: Distill'd by the Retort there first comes over a clear, limpid, and colourless Phlegm, somewhat acid, and smelling very strongly of Juniper, in Quantity about an Ounce and a quarter from the Pound; then about a third Part of that Quantity of a reddish Phlegm, partly of an acid and partly of an urinous Taste; then a thin pellucid reddish Oil, equal to half the Weight of the Resin; and after that a third Part of that Quantity of a thicker Oil of the Consistence of Honey. The Remainder in the Retort is very small in Quantity, and is reduced to a yet smaller Portion by calcining for some Hours in an open Fire; after which about two Grains from the Pound of Resin may be obtained by Lixiviation, of a fix'd Salt, but this not of the alkaline but of the *Sal Salsus* Kind.

As Sandarach agrees much with Mastic on Analysis, so it does also in its Virtues. It is good in Diarrhœas, and in Hæmorrhages: Its Dose is from ten Grains to half a Dram: It is also sometimes prescribed in Gonorrhœas, and the *Fluor Albus*, but at present it is much disused in Medicine. It is however much used by our Writing-Masters, and others, who are curious in the Use of the Pen; they make a Powder of it which they call *Pounce*, and which being rub'd on the Paper makes it less apt to imbibe the Ink, and therefore leaves the out Line struck by the Pen more precise, sharp, and determinate. The Varnish-makers also use it, they make a kind of liquid Varnish of it, by dissolving it in Oil of Turpentine, or Linseed, or in Spirit of Wine.

It is rather a Gum - Resin as Zi with Sp^t of Wine yielded 30p of Resinous
the Residuum with Water 3p of Gummy Extract
Zi with Water yielded Zi of Gummy Extract
the Residuum with Spirit Zi of Zi of Resinous -

CHAPTER VII.

RESINA HEDERÆ,

Ivy Resin.

THIS is one of the Resins of the Shops, which have the Fortune to be, though very improperly, call'd Gums; it is inflammable, and soluble only in oily or spirituous Menstruums, which are the incommunicable Properties of a Resin, and cannot belong to a Gum. The Ivy Resin, or as it is commonly call'd Gum Ivy, is a very hard and compact Body: We meet with it in Masses of various Sizes, which are usually however only single Drops, larger or smaller according to the Time they had been in forming on the Shrub; some of them are of the Size of a Chesnut, or larger, but the Generality are much smaller; and much of it is in Pieces, the largest of which does not exceed a Pea. It is moderately heavy, its Colour is a dusky brown, with an obscure Cast of a ferrugineous Reddishness in it on the Surface; it is somewhat pellucid in small Pieces and is much redder when broken than it appears externally, but generally it is variegated more or less throughout with the rust Colour: Its Taste is somewhat acid, sub-astringent, and aromatic, but with a peculiar Flavour that distinguishes it from that of all other Resins, and is not very agreeable: It has scarce any Smell except when burnt, but it readily takes Fire on holding it to a Candle, and burns a long Time with a bright and strong Flame, and with a Smell like that of Frankincense.

We have it from *Persia*, and some other of the hot Countries, but nowhere except in these, though the Plant which produces it is common enough every where.

This Plant or Shrub is one of the *Pentandria Monogynia* of *Linnaeus*, and one of the *Arbores fructu umbilicato minore, sive baccifera umbilicata* of Mr. Ray: And is well known under the Name of the common Ivy. It runs up Trees and old Walls with us, and in all Parts of *Europe* as well as in the *East*; but though in the warm Countries it yields a vast Quantity of this Resin, yet it has been affirm'd, that with us it never yields any; this however is going too far. Mr. Ray mentions some of it having been found on Ivies in *Worcestershire*. *John Bauhine* mentions his having seen Resin on the Ivies about *Geneva*; and *Pomet* tells us, that he took a large Mass from an Ivy at *Montpelier*; these however are only singular Instances of what may happen; there never is any great Quantity produced with us, but our Shops are obliged to be supply'd from the *East*.

The *Resina Hederæ*, distill'd by the Retort, yields a moderately large Portion of a limpid Phlegm, of an acid Taste, and of a resinous Smell; after this a smaller Quantity of a reddish and more acid Liquor; and after this a very small Quantity of an alkaline Liquor, so strongly so indeed that it ferments with Acids: Then comes over a moderate Proportion of a limpid yellowish Oil; then a larger Quantity of a reddish Oil, of a thicker Consistence but yet fluid, and containing some Portion of an Acid. The Remainder after this is in larger Quantity than that from most other Resins, it is a black Coal, but being calcin'd in an open Fire it becomes reddish, and loses much of its Weight; after this an alkaline Salt may be drawn from it by Lixiviation, in the Pro-

portion of about four Grains from the Pound of Refin used. The Quantity of the first clear Liquor is near two Ounces from the Pound, that of the second near half as much, and that of the third very small. The yellow Oil is about an Ounce and a half from the Pound, the reddish more than three and a half. This Analysis shews the *Resina Hederæ* to be very different from the Generality of the other Refins.

The antient *Greeks* were acquainted with this Refin, they call'd it *Lachryma Hederæ*, as some also do to this Day. It is said to be emollient and detergent, and to make a noble Balsam for fresh Wounds, but it is not at all in Use with us on these Occasions: The *Persians* esteem it much as an Astringent.

Natural vegetable Productions

Used in M E D I C I N E.

C L A S S the T H I R D.

G U M S.

TH E Bodies of this Class, if we were to allow all to be so which are generally received as such, and call'd by the Name, would appear very numerous; but on a strict Enquiry, the far greater Part of them appear to be properly either of the Gum Refin, or of the absolute Refin Class. When all that are thus improperly call'd Gums are separated and placed in their proper Classes. The Bodies truly belonging to this are reduced to so small a Number as four, these are

1. GUM ARABIC.

3. GUM TRAGACANTH.

2. GUM SENEGA.

4. MANNA.

This last has been imagined a honey Dew falling on the Trees which afford it, but it is truly an Exudation of their Juices, and is a genuine Gum.

G U M S properly so call'd.

C H A P T E R I.

GUMMI ARABICUM,

Gum Arabic.

G U M Arabic is a hard, dry, and solid Gum, brought to us in loose Granules, or single Drops, but these of a very considerable Size, many of them larger than a Walnut, though somewhat under that Size is the more usual

usual Standard, and many of them are much smaller; they are frequently round or nearly approaching to that Figure, often Pear-fashioned, or somewhat oval and smallest at one End, sometimes oblong or twisted, and of many other perfectly irregular Figures: And great Part of them come to us in Fragments, These Globules having been broken into two or three Pieces; their Surface is wrinkled, rough, and unequal, their Colour, when purest of all, perfectly limpid and watery. At other Times this Gum is whitish, yellowish, or brownish; though the darker Pieces are much to be suspected of being Adulterations, the Druggists having the Art sometimes of mixing Gum Senega, which is darker than the Arabic, and sometimes common Plum Tree or Cherry Tree Gum when very dry, among it. Gum Arabic is, when purest, extremely pellucid, and indeed in the coarsest Pieces it is very much so; it is hard to break, but not tough, in the manner of Tragacanth, and when broken is extremely bright and glittering, not a little resembling the Surface of broken Crystal. It has no Smell and scarce any Taste. When taken into the Mouth it softens and sticks to the Teeth, and in Time wholly dissolves. Dissolved in Water it gives that Fluid not only a Thickness but a great Viscidity.

Gum Arabic is brought to us from the Place whose Name it bears, and also from *Ægypt* and the Coasts of *Africa*. It is to be chosen pale coloured, hard and dry, and free from all Admixtures of Foulness. There is sometimes met with among the Druggists, a coarse, foul, and brownish red Kind of Gum Arabic as it is called, not in loose Drops, but found in large Masses. This is used by the Artificers, but is never to be thought of for medicinal Purposes.

Gum Arabic was well known to the Ancients, and they were as well acquainted with its true Origin. *Dioscorides* calls it *Gummi Acaciæ Acanthæ*, and *Galen* *Gummi Thebaicum*; others have called it *Gummi Babylonicum* and *Saracenicum*, and the Generality of the World as we do, *Gummi Arabicum*. No Body ever doubted the *Theban* and *Ægyptian* Gum of the Ancients was, as *Dioscorides* calls it, the Gum of the *Acacia* Tree, but it has been much doubted, whether what we have in the Shops at this Time be the same Gum with theirs, or be not rather the Gum of Cherry and Plum Trees. This is a Suspicion however very idly founded: We know our Gum Arabic is imported from *Ægypt* and *Africa*, and we know also that Plum and Cherry Trees do not grow there. But on the other Hand, the *Acacia* Tree grows there in great Abundance; and as *Bellonius*, *Alpinus*, and others who have been there, assert, they produce at this Time a vast Quantity of Gum. We may also add by way of collateral Proof of the Genuineness of this Drug, that we often meet with Fruits and Spines of the *Ægyptian Acacia* in the Chests of Gum Arabic brought over to us.

The Tree which produces the Gum Arabic is one of the *Polyandria Monogynia* of *Linnaeus*, and one of the *Arbores siliquosæ floribus difformibus sive papilionaceis* of *Ray*. It is described by *C. Bauhine* under the Name of *Acacia folio Scorpioidis leguminosæ*, and by others *Acacia vera*, and *Acacia Ægyptia floribus luteis*. It is a large and spreading Tree: Its Trunk grows to a Foot or more in Diameter. It is armed on the Branches with very large and sharp Thorns. The Leaves are pinnated, and two Inches long; the Flowers yellow, of the Shape of the Pea-Blossom, and they stand in Clusters. The Fruit is a Pod

in

in Shape like that of a Lupine, four or five Inches long. It contains fix, eight, or more Seeds, and swells out into a considerable Breadth in the Parts where they are lodged; but in the intermediate Spaces is so narrow, that the several Seeds look as if only threaded on a large Packthread.

The Seeds are of an oval Figure, flatted, and hard; the Tree is observed to be particularly plentiful about *Cairo* by *Lippi*.

The *Egyptians* bruise the Pods and Seeds of this Tree while yet young and tender, and express from them a Juice, which when inspissated in a proper manner, is the *Acacia* of the Shops, to be treated of in its Place. The Bark of the Trunk and large Branches of the Tree naturally cracks in several Places, and from these Cracks there issues a thick Liquor, which hangs in larger or smaller Drops on them, as we see the Gum on our Plum and Cherry Trees do. This hardens in the Air, and becomes what we call Gum Arabic. The Generality of this forms itself into roundish Masses, but some of it runs out into long and slender Portions, which are often twisted and curled so as to resemble Worms and Caterpillars: This was what the Ancients called vermicular Gum Arabic, and esteemed greatly more than the other, though the Difference in reality is nothing.

A Pound of Gum Arabic, chemically analysed, yields first nearly two Ounces of an insipid and scentless Phlegm, then somewhat more than five Ounces of an acid Liquor of a reddish Colour; after this near an Ounce of an urinous or alkaline Liquor, and finally about three Quarters of an Ounce of an Oil, partly thin and fluid, and partly thick as Butter. The Remainder in the Retort is a black Coal, weighing near four Ounces. This calcined in an open Fire and lixiviated, yields near two Drams of a fixed alkaline Salt.

Gum Arabic being truly and simply a Gum, and having nothing of the resinous Kind, is perfectly soluble in Water, not at all in Oil or Spirit of Wine. In the Fire it does not flame at all, but burns to a black Coal.

It is of very frequent Use in Medicine: It obtunds the Acrimony of the Humours, and inspissates them when too thin. It is found of great Use in Stranguries, in Coughs, and in Spittings of Blood. Its Dose is from a Scruple to a Dram or more in Solution. Where sharp Humours have abraded the Mucus of the Stomach, Intestines, Bladder, or Urethra, it is found to alleviate the Pain, and effectually supply a Sort of Mucus from its own mucilaginous Parts. It is very commonly given in Solution in Barley Water, and Emulsions, and it may be administered in Powder in Bolusses: The ready Way of reducing it to Powder is to let the Mortar and Pestle be a little warmed.

It is beside its Use in extemporaneous Prescription, an Ingredient in the Theriaca, Mithridate, and many other of the Compositions of the Shops.

CHAPTER II.

GUMMI SENEGA,

Gum Senica.

GUM Senica, or Senega, as it is variously written, is a Gum extremely resembling Gum Arabic. It is brought to us in loose or single Drops,

It dissolves perfectly in Linseed Oyl producing no Apparent Change in it, except
the rendering it of a thicker consistence. Institutes of Chemistry p. 91. vol. 2—

Drops, but these are much larger than those of the Gum Arabic usually are. It is not uncommon to meet with them of the Bigness of a small Egg, and sometimes they are much larger; they are usually of a roundish or oval Form; their Surface is very rough or wrinkled, and appears much less bright than the inner Substance where the Masses are broken. It is very hard, but not tough, considerably heavy, and of an extremely fine and even Texture. When broken it is found to be most frequently of a pale brown Colour, but like the Gum Arabic it is sometimes yellowish, sometimes reddish, and sometimes whitish. These last Pieces, and not unfrequently some of the others too are broken into smaller Fragments, and mixed among the Gum Arabic by our Druggists. The Fraud however is of very little Consequence, both being of the same Nature and Virtues. Gum Senega has no Smell, and scarce any Taste; it melts in the Mouth in the Manner of Gum Arabic, that is very slowly; but in fine, perfectly; and it easily dissolves in Water, but not in Oils or Spirits.

It is brought to us from the Country through which the River Senega runs, and is collected there in vast Quantities by the *Negroes*, partly to be exported as Merchandize, and partly for their own Use. They dissolve it in Milk, and in that State make it a principal Ingredient in many of their Dishes, and often feed on it thus alone.

We are not at all acquainted with the Tree, which produces this Gum, but from its Resemblance to Gum Arabic, and from its having often the Thorns and Fragments of the Pods of a Tree of the *Acacia* Kind mixed among it, it is natural to conclude that some Species of that Tree affords it.

Its Virtues are the same with those of the Gum Arabic; but it is rarely used in Medicine, unless as mixed with the Gum Arabic; the Dyers and other Artificers consume the great Quantities of it that are annually imported here.

CHAPTER III.

GUMMI TRAGACANTHA, *Gum Tragacanth.*

GUM Tragacanth, or as it is usually spoken, Gum Adragant, or Gum Dragon is a genuine Gum of a very singular Nature. It is brought to us usually in long and slender Pieces of a flatted Figure, more or less, and these not strait, or rarely so; but commonly twisted and contorted various Ways, so as to resemble Worms. We sometimes meet with it like the other vegetable Exsudations in roundish Drops, but these are much more rare. It is moderately heavy, of a firm Consistence, and properly speaking, very tough rather than hard, and is extremely difficult to powder, unless first carefully dried, and the Mortar and Pestle kept warm. Its natural Colour is a pale whitish, and in the cleanest Pieces it is somewhat transparent. It is often however met with tinged, brownish, and of other Colours, and more opaque. It has no Smell, and very little Taste, but what it has is disagreeable. Taken into the Mouth it does not grow clammy, and stick to the Teeth, as the Gum Arabic does, but melts into a Kind of very soft Mucilage. It dissolves

in Water but slowly, and communicates its mucilaginous Quality to a great Quantity of that Fluid. It is by no means soluble in oily or spirituous Liquors, nor is at all inflammable. It is brought to us from the Island of *Crete*, and from several Parts of *Asia*. It is to be chosen in long twisted Pieces, of a whitish Colour, very clear, and free from all other Colours; the brown, and particularly the black are wholly to be rejected. There is no Loss in these however to the Druggists; for the Artificers of various Kinds who use this Gum are ready to buy the dirtiest of it, as serving their Purposes as well, at a somewhat smaller Price.

The Shrub which produces the Gum Tragacanth, is one of the *Diadelphia Decandria* of *Linnaeus*, and one of the *frutices siliquosæ floribus difformibus sive papilionaceis* of *Ray*. It is described by all the botanical Writers under the Name of *Tragacantha*, and *Tragacantha Cretica Incana, flore parvo, lineis purpureis striato*. Its Root is very long and woody, and of a brown Colour. Its Trunk rarely exceeds an Inch in Thickness, and grows to about three Feet in Height. It is divided into a vast Number of Branches, which are beset with very long and sharp Prickles of a whitish Colour. The Leaves are pinnated, small, and of a whitish Colour. Its Flowers are small, papilionaceous, and of a whitish Colour, streaked with Purple; and these are succeeded by Pods which are whitish and hoary, and contain each several Seeds of a Kidney-like Shape. It is very frequent in *Crete*, and other of the adjoining Places. It naturally exsudates a great Quantity of the Gum from its Trunk and larger Branches; but the Natives enlarge their Crop of it by wounding the most flourishing Shrubs in several Places.

The Month of *July* is the Time when the Shrub most abounds in Gum; at this Season, if a Branch of it be cut through, all the Pores of the Wood will be found full of it, and soon after it makes its Way out at every Aperture if confined.

Tragacanth, on a chemical Analysis, is found to yield the same Sort of Principles with Gum Arabic, though not in the same Proportion.

A Pound of this Gum, distilled in a Retort, yields first about two Ounces of a limpid Phlegm without Taste or Smell; after this comes over a reddish Phlegm, of an empyreumatic Smell, of an acid Taste, mixed with a Bitterness somewhat like that of the Kernel of the Peach; of this there is near five Ounces; after this comes a brownish or somewhat reddish Liquor, partly acid, and partly alkaline and urinous; its Quantity about five Drams and a half; and after this about the same Quantity of Oil partly thin and limpid, partly thick and opaque. The remaining Matter in the Retort is then a black Coal of about four Ounces in Weight; this may be, by Calcination in an open Fire, reduced to about an eighth Part of its Weight, and is then in Form of yellowish Ashes; and these lixiviated in the common Way, will yield near four Scruples of a fixed alkaline Salt.

Tragacanth has the same Virtues with Gum Arabic, but in a greater Degree. It greatly inspissates and obtunds the Acrimony of the Humours, and is therefore found of vast Service in inveterate Coughs and other Disorders of the Breast, arising from an acrid Phlegm, and in Stranguries, Heat of Urine, and all other Complaints of that Kind. It is usually given in the compound Powder, called the *Species Diatragacanthi frigida*, rarely alone. It is also by
some

on Mount Ida, according to Tournefort Vol. 1. p. 58.

some esteemed a very great external Remedy for Wounds, and is in this Sense made an Ingredient in some sympathetic Powders, with Vitriol and other things. It is by some recommended alone, in Form of Powder or strong Mucilage for Cracks and Chaps of the Nipples in Women. But it is found by Experience to be a very troublesome Application in those Cases, and to do more Harm than Good, as it dries by the Heat of the Part, it draws the Lips of the Wounds farther asunder than before.

CHAPTER IV.

M A N N A.

M A N N A being the concreted Juice of a Vegetable naturally exuding from it; soluble in Water, and not inflammable, has the genuine Characters of the Gum Class, and is properly and truly a Gum, though it want that viscous Quality which many have without Foundation supposed essential to these Bodies.

The Manna of the Shops is a Honey-like Juice, naturally concreted into a dry and solid Form: It is brought to us sometimes in small Granules or Drops of an irregular Figure, roundish, oblong, crooked, and sometimes contorted; and much of it in long and flattish or cylindric Masses of a various Size. It is considerably heavy, but of a lax Texture, and very friable, though of a solid Consistence. It is seldom so dry but it adheres more or less to the Fingers in handling. Its Colour is whitish, yellowish, or brownish; but these Tinges are never very deep, unless the Manna has been kept very long, in which Case it sometimes becomes of a dusky, ferrugineous, or deep reddish brown Colour. In the purest Pieces it is somewhat transparent, and naturally firm and dry, but if ill kept or exposed to the Damps of the Air, it by Degrees grows clammy, and afterwards loses its Figure, and becomes soft as Honey. It has no very remarkable Smell, but its Taste is very pleasant, having the Sweetness of Sugar, and with it a Sharpness that renders it very agreeable.

There is great Caution and Nicety to be used in the Choice of Manna, no Drug being so subject to Decay, or to be adulterated. It should be chosen whitish, or at the utmost with only a faint Cast of yellow, not too heavy, in regular dry Granules, or in moderately long *Striae* or Flakes, of a pleasant Taste, and dissolving wholly in the Mouth, not leaving a farinaceous Substance behind it, as much of the common Manna does, which has been adulterated with Honey and Flower. Such as is blackish and dirty is wholly to be rejected, as also all that is of a soft and Honey like Consistence.

The Druggists have inculcated in many People a Notion that Manna should be moist and fat, and that the most viscid, damp, and clammy, provided it be not absolutely liquid, is best. This answers their Purposes best, but no body else is a Gainer by it; This is at best but Manna injured by a damp Air, often it is such as has been damaged and got wet by some Accident in the Carriage, and much of it is a mere Counterfeit made of Honey, Wheat Flower, and Sugar, to which a purgative Virtue has been given, by the Addition of a small Portion of Scammony. Some esteem this Sort of Manna for purging

more briskly than the other Kinds, but tis plain to what that may be owing, and how badly such a Purge is qualify'd to answer the Purposes of Manna.

We sometimes meet with Flakes of Manna two Feet or more in Length, which have this quick purging Virtue also, these are to be always suspected: They are in general the Work of some *Jews* among us, who have the Art of boiling up the worst Manna of our Shops with Honey, Flower, and Scammony, and forming it into this fine Resemblance of the true Manna. We meet sometimes also with large Lumps of a white Manna, of an irregular Figure, solid and dry, yet crumbly between the Fingers, these are also to be rejected; they are a Mixture of the same Kind, not form'd into these artificial Flakes. An accustomed Palate will distinguish all these counterfeit Mannas by the Taste only, so that our Druggists are not so often deceived as they deceive.

Manna is brought to us from *Calabria* and *Sicily*: There are two somewhat different Trees which produce it, but both of the same Genus: Both of the number of the *Polygania Diæcia* of *Linnaeus*, and of the *Arbores fructu per maturitatem sicco* of *Ray*: And both Species of the *Fraxinus* or Ash Kind.

The one of these is described in the *Hist. Lugd.* under the Name of *Ornus*, and by *C. Baubine* under that of *Fraxinus humilior sive altera Theophrasti minore et tenuiore folio*. This Species is rather a Variety of the common Ash than a distinct Tree: Its Leaves are more finely serrated than those of the common Ash, and its Branches much fuller of those Knots from which the Leaves arise, than those of the common Kind, in all other Respects it is perfectly like it.

The other Manna Ash is described by the same *C. Baubine* under the Name of *Fraxinus rotundiore folio*. This is much more different from the common Ash than the former, yet seems to be truly also no more than a Variety, not a distinct Species of it. The Leaves of this, as those of the other, are pinnated in the manner of those of the common Ash, but in this the *Pinnæ* are shorter and rounder, somewhat like those of the *Pistachia*, and Turpentine Trees, and like them having one half of the Leaf, and that always the inner half, shorter or reaching a less Way down the Pedicle than the exterior half.

These two Species, or Varieties of the Ash, equally yield the true Manna in *Calabria*. When the Heats of Summer are free from Rain, the Leaves, and the Trunks and Branches of both, exsude a white Honey Juice, which concretes into what we call Manna forming itself as it runs; and according to its different Quantity, into either small roundish Drops, or long Flakes. What flows out of the Leaves of these Trees is all natural, but the People cut and wound the Trunk and Branches to encrease the Quantity produced there: The *Italians* distinguish the two Kinds of the Manna thus produced, calling that which flows spontaneously from the Leaves *Manna de fronde*, and what is obtained by wounding the Bark of the Tree *Manna di Corpo*, and *Manna Forzata*.

The Season of the flowing of the Manna from these Trees is from about the twentieth of *June* to the End of *July*, during this Time it runs from the Wounds, and the natural Cracks in the Bark, from Noon till Sun-set, and according to the Quantity or to the Size of the Opening: It concretes from a pellucid Liquor into a firm white Substance of various Shape and Size. If the Night after this prove rainy, the whole Quantity of Manna is washed off and lost; if it be fair they collect it the next Morning with a sort of wooden Knives, leaving

leaving the Apertures of the Wounds ready open for the discharging of more. They afterwards spread it out on Paper in the Sun, till it be so dry as not to stick to the Fingers, in which State it is fit to be exported. They generally let the Trees exsudate as much as they will of the Manna naturally during this Season, and when no more flows by that means they cut and wound them in several Places to the Wood, and there flows out a vast Quantity more of the Manna, less fine indeed than the former, but of considerable Value; they suffer this to run down the Trunk of the Tree in long Streams, and even to form Masses about its Bottom; they cut the condens'd Matter into Flakes of what Length they please, and separating the Dirt and Filth from the rest at the Bottom, they dry all in the Sun for Use. The Manna in very large and long Flakes, so much esteem'd by some of our Apothecaries, is of this Kind; for the Juice which exsudates naturally, rarely is in such Quantity from any one Opening as to form such; this is therefore of the *Manna Forzata* Kind, and is inferior to the naturally flowing sort.

The finest Manna of all is that which oozes naturally out of the Leaves, after the Season of collecting the common Manna is over, that is in the Month of *August*; at this Time there is an Exsudation of this Honey Juice every Day about Noon, which stands in little round Drops like Pearls about the Ribs of the Leaves, and soon dries into a hard white friable Matter. The Leaves are sometimes so loaded with this Manna, that they appear quite white as if cover'd with a hoar Frost. The Granules of this are perfectly white, round, and not larger than Grains of Millet Seed. This was once much used in Medicine, but the Difficulty of collecting it has now render'd it unknown in the Shops.

The *Calabrians* distinguish also the Manna, which is produced by Incision from those Trees which have before yielded a great deal spontaneously, and that procured by the same means from such as had not yielded any before; this last they prefer greatly to the former, as it approaches more to the Nature of that which flows from the Trees spontaneously.

The fine large flaky Manna which is hollow within, and of a clean white Colour, and which is sometimes, though not very frequently, met with in our Shops, is a very clean and valuable Kind; the *Calabrians* however use a little Artifice to procure it in this Form: When they have made a Wound in a good Part of the Trunk of the Tree, they stick into it a long slender Twig of some Tree whose Wood is firm in the smallest Shoots; this they place in a depending Situation, and the Juice which exsudates from the Wound naturally runs along this Stick till it has cover'd it all over; then the Coat of Manna is rendered more and more thick as more of it flows from the Tree, and when the whole is as thick as they desire, they separate it from the Tree and pull out the Stick from within, after which they dry it carefully. It is easy to distinguish these long, hollow, and clear Pieces of Manna, from the yellowish, coarser, and flat ones, which are either such as have run from the Wounds down the Bark of the Tree, after the first and finest Crop of Manna is over, or they are such as have been made by Art.

Manna, distill'd in a *Balneum Vaporis*, yields a small Quantity of a limpid Phlegm, insipid and without Smell: A Pound of good Manna moderately dry yields near an Ounce and a half of this. The remaining Mass taken out of the

Vessel and powder'd, being distill'd in a Retort, yields first about half an Ounce of a limpid but manifestly acid Liquor; after this comes over a reddish empyreumatic Liquor, partly acid and partly urinous, in Quantity between four and five Ounces; then an Ounce of a very fine and thin Oil of a reddish Colour, and about an Ounce and a quarter of a thicker Oil, concreting into Lumps of a resinous Appearance. The Remainder in the Retort is then a black Coal, weighing somewhat more than three Ounces, of a compact Texture, and destitute of Sweetness; this calcined in an open Fire will be reduced to about three Drams, and from this a Dram of a fix'd alkaline Salt may be extracted by Lixiviation.

The Antients were well acquainted with Manna: *Dioscorides* tells us that it purges crude Humors off by Stool, but *Galen* seems to have been ignorant of its cathartic Quality. The *Arabians*, and the modern *Greeks*, were all acquainted with its Virtues, and all celebrate it with great Encomiums as a gentle and mild Cathartic. It is at present in great Esteem in the same Intention: It is the mildest of all Purges, and the safest; it may be given to Children, to Women with Child, and to People of the most tender Constitutions, with perfect Safety; and it never fails gently to move the Bowels, and carries off the thick viscid Foulnesses from them. Its Dose is from two Drams to an Ounce or more, and it is most conveniently given in Solution: When required to work more briskly than it naturally would, it may be 'quicken'd with an Addition of *Glauber's* Salt.

The Ash is not the only Tree that exsudates Manna. In the *French* Shops there is often met with a Manna produced from the *Larix* or Larch Tree, they call this *Briançon* Manna from the Place it is brought from: It is always in Form of small Granules; of a roundish Figure generally, though sometimes oblong and crooked: The usual Size of the Globules is that of a Coriander Seed; it is white, dry, and not over heavy; it has the true Taste of Manna, sweet, but with a Mixture of the acid, but with this it has somewhat of the Resinous or Turpentine Flavour of the Tree; it is found to purge less than the *Calabrian* Manna, and is for that Reason less esteem'd.

The Tree which produces this is one of the *Monacia Monodelphia* of *Linnaeus*, and of the *Arbores fructu a flore remoto corniferæ* of *Ray*: Of as different a Genus from the Ash as well can be. And is described by Authors under the Name of the *Larix vulgaris*, or *Larix folio deciduo*, being the very Tree which yields us the *Venice* Turpentine. From the latter End of *June* till the End of *August* this kind of Manna exsudates naturally from the Leaves, not from the Trunk or Branches of the *Larix*: If there happen Rains it is wholly dissolved and washed away, but if the Season prove dry the Peasants cut off the Branches, and lay them in the Sun till the Manna on the Leaves is dry'd, when they separate it; but this is very difficultly done, and the Quantity procur'd at best is not great: Some have pretended that this Manna was not an Exsudation of the *Larch* Tree, but a Dew falling from the Air and concreting on the Leaves of it; but *Lobel* disprov'd this, by keeping some fresh cut Boughs of the *Larix* in a Cellar at this Season, which, after a Night, produced in this close Place Manna like the others on their Leaves.

Our very Black Thorn, or Sloe Tree, sometimes yield a true Manna from the Ribs of the Leaves in Autumn: I have met with this in several Parts of
England,

England, but it is in very small Quantity, though the Taste discovers it to be true Manna in all Respects.

There is yet however another Kind of Manna to be mentioned, which is produced from a Shrub very different from all these, and that in such Quantities as to be in common Use in the Part of the World where it is found: This is the Manna *Persica* call'd also *Tereniabin* and *Trungilien*. This somewhat resembles the *Briançon* Manna in Figure, being naturally form'd into little roundish Granules of the Size of a Coriander Seed, and of a reddish or yellowish brown Colour; these are light and tolerably hard, and dry when well kept, but they are usually made up into Masses by the People who collect them, in which their Carelessness leaves also several Fragments of the Leaves, Spines, and Bark of the Plant. It is of the same sweet Taste with the *Calabrian* Manna, and when dissolv'd and purify'd from its accidental Foulnesses, is found to purge as well in about the same Dose. The *Eastern* People often give indeed three Ounces of it for a Dose, dissolving it in Water and throwing away the Fæces; but then these Fæces, which consist of the Parts of the Plant and other Foulnesses, often are more than half the Weight of the whole. It is pretty certain that this *Persian* Manna is the *Tereniabin* mentioned by *Serapio* and *Avicenna*, and which they supposed fell in manner of a Dew upon certain thorny Shrubs. This Manna is however in Reality no more a Dew than the other Kinds, but is like them exsudated from the Shrub on which it is found, and is truly its concreted Juice.

The Shrub which produces it is one of the *Diadelphia Decandria* of *Linnaeus*, and of the *Arbores Siliquosæ floribus difformibus sive papilionaceis* of *Ray*. It is described by *Rawwolf*, and others, under the Name of *Albagi Mauro-rum*, and by *Caspar Baubine* under that of *Genista Spartium spinosum foliis Polygoni*. It is a small Shrub, rarely growing to more than four or five Feet high: Its Root is long and goes deep into the Earth: Its Stem small and slender, but variously branched, and arm'd with a vast number of fine and extremely sharp Prickles of an Inch long: Its Leaves are somewhat like those of the common knot Grass, more than twice as long as they are broad; they are of a blueish green Colour, and grow one at the Base of every Spine: The Flowers are small and of a pale purplish Colour: The Pods which succeed these are near an Inch long, cylindric and crooked, and swelling out in several Places which mark where the Seeds are deposited; these are of a reddish Colour, and of an oval or kidney like Figure. The Leaves, Fruit, and every Part of this Shrub, are of an astringent Taste, though its exsudated Juice in the manner of the other Manna is purging.

It grows in great abundance in *Ægypt*, *Armenia*, *Georgia*, and *Persia*, and in some of the Islands of the *Ægean* Sea; and *Lippi* says, that in *Ægypt* it sometimes naturally yields a red astringent Resin like the *Sanguis Draconis*; this is no more wonderful in respect to its producing also a kind of Manna, than that of *Briançon* Kind should be produced from the same Tree that yields the *Venice Turpentine*.

The *Persian* Manna is found, in the hottest Months of the Year, standing in Drops upon the Leaves and Branches of this Shrub, where it by Degrees hardens into a proper Consistence, and is gather'd by the People on the Spot, and sold all over the *East* at no inconsiderable Price.

These

These are the Substances at this Time understood in the Shops under the Name of Manna, but the Word has had many other very different Senses. The *Hebrews*, who had been acquainted with the Manna of the *Albagi*, last described, which was round and like Coriander Seed, and sweet to the Taste, and which they call'd *Man*, (as we find in the earliest Works in which it is mentioned in that Language,) when they found a miraculous Food in the Desert, which was also round, sweet, and of the Bigness of Coriander Seed, did not scruple to call it *Man* or Manna, as it so much resembled that Substance: Their Exclamation *Man bu* on the seeing it, not having been meant to express, as is vulgarly suppos'd, *What is this?* but, *This is Man* or *Manna*. This was a Conjecture the more natural to them, as they saw plainly enough that this descended from the Heavens in Form of a Dew, and concreted into the Globules they saw it in; and the received Opinion of that Time was, that the *Oriental* Manna was form'd in the same manner, none supposing in those early Times that it was the natural Juice of the Shrub it was found upon, but every Body imagining that it was a Dew from the Clouds concreted on the Plant.

Moses did not determine the Question for them, whether it was or was not a kind of Manna; all that he had to do was to tell them, that it was sent for their Support, and to instruct them in what manner they were to gather it.

It is however evident enough that this was not Manna, nor any thing of that Nature, because it melted away as the Sun grew hot, whereas the Manna hardens instead of dissolving in that Heat.

The antient *Greeks* used the Word Manna also in a Sense very different from both these, they call'd the little Fragments of Frankincense broke from the larger Pieces in the Carriage, or otherwise, by this Name; and the Manna which was at the same Time very familiarly known among them, they call'd *Drosomeli*, *Aëromeli*, and *Elæomeli*; and finally the botanical Writers have given the Name to a kind of Grass, which they call *Gramen dactyloides esculentum*, and *Gramen Mannæ*.

The very oldest of the *Greek* Writers were acquainted with Manna, they esteem'd it a kind of Honey from its Sweetness, and imagined to be form'd in the Air and lodged on the Leaves and Branches of Trees, for they had no Notion of its being exsudated from them; they therefore call'd it *Mel Aërium*. *Aristotle* mentions it as a Concretion from the Air, and imagines that the Bees form'd their Honey of it: And he tells us in another Part of his Works, that in *Cappadocia* Honey was often found where there were no Combs, and in his Description of this Substance found on Trees, nothing can be more evident than that he means Manna. *Theophrastus* celebrates the Oak in particular, for having found it, on its Leaves in greater abundance than on those of any other Tree: He even goes so far as to distinguish three Kinds of what he calls Honey; one, he says, was the common Kind which the Bees furnish us with, extracting it out of the Flowers of Plants; a second he tells us was form'd from the Air, by the Sun's condensing certain Exhalations from the Earth, this he says was principally found in Autumn, and this was plainly our Manna: The third Kind he says was produced in Reeds, and this was evidently our Sugar.

Nothing is more plain, than that *Dioscorides* meant Manna by his *Elæomeli*; and he tell us, that in some Parts of *Syria* it flowed from the Trunks of Trees, in Form of a Liquor thicker than Honey, and of a sweet sugar-like Taste; and

It is often counterfeited by a Mixture of Sugar & Starch, These may be discovered by dissolving
the Mass in Water & inspissating the Solution, when if adulterated Sols will turn out far
more clammy & tenacious than the genuine, & quite different from it in appearance.
Sugar may likewise be distinguished in a good Measure by Crystallization

Gum Resins and those Bodies y^t are inflammable, not wholly dissoluble in either Sp^t of Wine
or Water.

he adds, that it was a gentle Purge, and was to be given in Solution in a large Dose. *Galen* distinguishes the Honey of Animals or Bees, and that of Plants, as he calls it, but he supposes the latter to be a Concretion from the Air, not a Product of the Tree on which it was found, as all the rest of the Antients also did. The *Latin* Poets who talk of Honey being found on the Oak, Ilex, &c. also plainly mean the same Substance: Indeed it is not till very lately, that the World has got over the Mistake of the Manna being an aerial Produce: The thing that convinced every Body, was an Experiment made by covering a Tree with Sheets in the Manna Season, and the finding as much Manna on it afterwards as on those which were open to the Air and Dew.

Natural vegetable Productions

Used in M E D I C I N E.

C L A S S the F O U R T H.

G U M R E S I N S.

TH E Bodies of this Class, arranged according to their more or less frequent Use in Medicine, stand thus.

The Gum Resins more frequently used are,

- | | |
|-----------------|----------------|
| 1. GALBANUM. | 3. MYRRH. |
| 2. ASSAFOETIDA. | 4. AMMONIACUM. |

The Gum Resins less frequently used are,

- | | |
|----------------|-----------------|
| 1. SAGAPENUM. | 4. BDELLIUM. |
| 2. OPOPANAX. | 5. EUPHORBIIUM. |
| 3. SARCOCOLLA. | |

G U M R E S I N S

More frequently used in M E D I C I N E.

C H A P T E R I.

GALBANUM.

GALBANUM is a somewhat soft and fatty Substance: We meet with it in the Shops sometimes in loose Granules, call'd Drops or Tears, and sometimes

sometimes in large Masses, composed of a number of these blended together, but in these there often is also some accidental Foulness mixed with the Gum.

The single Drops are of various Shape, but usually when perfect approaching to a roundish, oblong, or Pear-like Shape; in the Masses they generally lose their Form. Galbanum is soft almost like Wax, and in the same manner ductile between the Fingers; it is somewhat pellucid in small Pieces, of a smooth and glossy Surface, and in Colour, when it is fresh drawn from the Plant, white, but it afterwards becomes yellowish or reddish; its Smell is very strong and disagreeable; its Taste acrid, nauseous, and bitterish; it is truly of a sort of middle Nature between a Gum and a Resin, for it is inflammable in the manner of a Resin, and yet it is soluble in Water in the manner of a Gum, and will not dissolve in Oil as the pure Resins all do.

It is brought to us from *Syria*, and some other Parts of the *East*. It is to be chosen in Tears or loose Granules rather than in Masses, for these are always the purest; they should be flattish, moderately viscous, and glossy on the Surface: Such as is too soft, of a dark brown Colour, and in Masses mix'd with Sticks, and Dirt, is to be rejected. If it is not to be had in loose Grains, such Masses of it are to be chosen as are composed wholly of such, and are of a bright Colour, and have no great Softness.

The Antients were well acquainted with Galbanum: *Dioscorides* says, it was the Produce of a Species of *Ferula*, or Fennel Giant, which he calls *Metopion*; and he was so far at least in the right, that it is truly the Produce of an umbelliferous Plant, one of the *Pentandria Digynia* of *Linnaeus*, and of the *Herbæ umbelliferæ semina foliaceo sive ala foliacea Cincto* of Mr. Ray. It is described by *Tournefort* under the Name of *Oreoselinum Africanum Galbaniferum frutescens anisi folio*, and in the *Paradisus Batavus* under that of *Ferula Africana Galbanifera Ligustici foliis et facie*. The Root is thick, white, and of a woody Structure: Its Stalks are an Inch thick, and grow to five or six Feet high; they are round, jointed and filled with a white Pith; a membranaceous Film surrounds each Joint of the Stalk, and from these arise Leaves very like those of the common Anise, but larger, thicker, and more deeply divided. The Flowers stand in large Umbels at the Tops of the Branches, they are small and yellowish, the Seeds are of an orbicular Figure, thin, striated, and surrounded with a membranaceous Rim. The Leaves are of a strong Smell, and of an acrid Taste, but the Flowers and especially the Seeds much more so. The whole Plant abounds with a viscous milky Juice which it yields, when wounded in any Part, and which soon concretes into a Substance perfectly like the Galbanum kept in our Shops.

The Stalk of this Plant is not annual, it stands many Years: When it is in the third or fourth Year it naturally exsudates Drops of the Galbanum at the Joints: To encrease the Product the Natives at this Time wound the main Stem about an Inch or a little more above the Root, and from the Incisions made there, the Gum flows in great Abundance, and is collected for Use. The Plant is frequent in *Persia* and in many Parts of *Africa*.

It is to be observed that the Plant erroneously called *Ferula Galbanifera* by *Lobel*, which is the same with the *Ferulago latiore folio* of *C. Baubine*, does not yield the Galbanum, but another Gum Resin very different from it, of a deep red Colour, and a strong Smell not like that of Galbanum.

the the Resinous parts prevails, for it with rectified Sp^t of Wine yields 3ix of Resin.
with Water only about 3iij of Gum

I believe it comes from Syria to Marseilles & thence is transported to us.

out of Ziv Rectified Spirit of Wine dissolves Zij Zij
of the Residuum Water dissolves Zij Zp .

out of Ziv Water dissolves Zi Zj Zp —

— Strong French dissolves Zij Zp gr xv —

Schroder says that *Apa felida* may be dissolved over the Fire in Water
Vinegar or Wine, but only a Part of it, can be dissolved in any
of these Liquors.

A Pound of clean Galbanum, distill'd in a Retort, yields a little more than an Ounce and a half of a reddish, subacid, and strongly scented Phlegm; then a somewhat larger Quantity of a redder, and more strongly acid Liquor; and after this about half an Ounce of a brown empyreumatic Liquor, partly acid and partly alkaline; then near an Ounce of a brown clear Oil, and after this near three times as much of a thicker Oil of a greenish brown; and finally three Ounces and a half of a yet thicker Oil, approaching to the Consistence of Honey. The Remainder in the Retort, calcined to a proper Degree in an open Fire, yields by Lixiviation six or seven Grains of fix'd Salt, which is partly alkaline and partly of the *Sal Salsus* Kind.

Galbanum is soluble in hot Water, as also in Wine, or in Vinegar, but not easily in stronger or more spirituous Menstruums.

Its Virtues in Medicine are very considerable, it attenuates and dissolves tough Phlegm, and therefore is of Service in Asthmas, and in inveterate Coughs, which have their Origin in the same Humor. It also dissipates Flatulencies, and is of great Service in hysteric Complaints, promoting the Menses, and facilitating Delivery, and the Expulsion of the Secundines. It is given in Pills and Electuaries: It is also used externally in Form of a Plaister apply'd to the Belly, against habitual hysteric Complaints, and on many other Occasions. It is also an Ingredient in the *Theriaca*, *Mithridate*, *Diascordium*, and many other of the Compositions of the Shops.

CHAPTER II.

ASSAFOETIDA.

A S S A is a Name given to two very different Vegetables, the one a Resin, the other a Gum Resin; but they have always been distinguished by Epithets, expressing their Difference in a very obvious Quality, their Smell. Benjamin, which is one of the two *Assæ* of Authors, being always call'd *Assa-dulcis*; and the other, of which we are to speak in this Chapter, Assafoetida: This is a Gum Resin, approaching much to Galbanum in its Nature and Qualities. It is brought to us in large irregular Masses, which are form'd of multitudes of smaller Granules, or Drops, concreted together and adhering firmly to one another, and often lodged in a Quantity of Matter of the same Kind, not form'd into Granules at all, but serving as a sort of Cement to the rest.

It is of a compact and firm Texture, somewhat fattish, and soft, easily affected by Warmth, and capable of being moulded like Wax in the Hands: It is of a naturally bright and glossy Surface, and in Colour is properly white, but it is variegated with yellowish, reddish, or purple: Its Smell is very strong and disagreeable, somewhat like that of Garlick, but vastly more intense: Its Taste is bitterish, acrid, and disagreeable.

It is brought to us from *Persia*, and the *East-Indies*. It is to be chosen of a moderate Hardness, not too fat, and full of fine clean shining Grains: That which is brown or blackish, foul and dirty, and is too soft and unctuous, is to be rejected.

Assafoetida was well known to the Antients: *Dioscorides* and *Theophrastus* call it *Silphium*, *Hippocrates* *Opus*, and after him others *Opus Medicus*, *Opus*

Parthicus, and *Opus Cyrenaicus*. *Pliny*, and the rest of the old *Latins*, call it *Lafer* and *Laserpitium*; the *Arabians* *Alibit*; the *Persians* and *Indians* *Hingb*, and some of the later *Greek* Writers *Scordolasarum*. The Antients distinguished two Kinds of it, which they named from the Places whence they were brought, the *Cyrenaic*, and the *Median* or *Persian*: Of these the former was most esteem'd, and sold for the much larger Price. It was of a less offensive Smell than the *Persian*, and did not give such a lasting Stench to the Breath after taking it. However fond the *Greeks* were of the *Cyrenaic* *Assafoetida*, it was lost to the World in the Time of the *Romans*. In the Days of *Nero*, *Pliny* tells us there was but one Plant of it found in that whole Country, which was taken up and sent to *Rome*. After this Time, and indeed long before it, there had been no *Assafoetida* brought to *Rome*, but the *Persian* or *Median* Kind.

Authors have disputed greatly on the Subject of our *Assafoetida*, some affirming it to be the true *Silphium Lafer* and *Succus Cyrenaicus* of the Ancients, and others denying it. The Reasons for doubting ours being the same are the great Esteem the *Silphium* was in among the Ancients, their not only using it in their richest Cordials, but as Sauce among their Foods, and praising its fine Flavour; and lastly, their describing its Smell as pleasant; whereas ours is universally allowed to be the worst of all Stinks, and is called for that the Reason *Stercus Diaboli*, Devil's Dung. But we are to answer to this, that the Palates; and the Ideas of pleasant Smells and Tastes differ, in the different Parts of the World; and that however decried with us, *Assafoetida*, the same with what is sent over to us, is still in as great Esteem with the *Persians* and *Asiatics*, as it was with the *Greeks* and *Romans*; and by a strange Reverse of Opinions, as we call it the Excrement of the Devil, they call it the Food of the Gods. They search out the Plants which produce it on the Tops of the most frightful Precipices, and collect it in the midst of the scorching Heats of their Mid-day Sun, not only as a Merchandize, but as an Ingredient in their own Foods: And so much do the *Indians* differ from us in their Opinion of Scents, that they esteem this one of the sweetest and pleasantest smelling Drugs their Country produces.

Dioscorides, who praises the *Cyrenaic Silphium*, does not say it was pleasant to the Smell, or even that it was without the stinking Odour of the *Persian* Kind; his utmost Encomium of it rises to no more than the saying it had less of it. *Persia*, the Country whence we now have *Assafoetida*, was plainly then the Place whence the Ancients also had the greatest Quantity of the *Silphium* or *Lafer*; the *Persians* at this Time prepare the Drug in the same manner, and use it to the same Purposes that they did at that; and the *Cyrenaic* Kind was no other than a less strongly scented Sort of the same Drug: From all which it is very fair to conclude, that our *Assafoetida*, as to which some among ourselves also are so much in the ancient and *Eastern* Taste, that they rub their Plates with it before they eat their Meat upon them, and esteem it the highest and richest of all Sauces, is truly the same thing with the *Sylphium*, the *Lafer*, and the *Succus Cyrenaicus* of the Ancients.

The Plant which produces it is one of the *Pentandria Digynia* of *Linnaeus*, and one of the *Herbæ umbelliferae Semine foliaceo, seu alâ foliaceâ cincto* of *Ray*. We had a Multitude of various and false Accounts of it for a long Time, *Garcias* telling us it had Leaves like the Hazel, and *Bontius* making two Plants

was worth its weight in gold; Pliny tells us that the Publicans destroyed
all the *Laserpitium* in Cyrenaiica, by feeding their Cattle with it, having
experienced that it not only fattened them extremely but gave them a fine
Taste lib xix cap. iij — But Strabo says that the Numidians invading
that country pulled it all up by the roots lib. 17. p. 837.

of it, one like a Willow, and the other with a Root like a Turnep: Others have given it Leaves like the Fig Tree, others like those of Rice: And finally others have made it a Shrub of the *Phylleræa* Kind. *Kæmpfer* is the Author to whom we owe the true Account of it. This is given in his *Amœnitates exoticæ*, where he describes it fully and accurately under the Name of *umbellifera Levistico affinis foliis instar Pœoniæ ramosis, caule pleno maximo, semine foliaceo nudo solitario Brancæ ursinæ sive Pastinacæ simili radice Assamfetidam fundente*. The *Persians* call both the Plant and the Juice *Hingisch*, and the *Indians* *Kiing*; but the more accurate in both Countries call the Plant *Hingesch*, and the Juice or Gum *Hiing*.

The Root of this Plant is perennial and very large. It is covered with a thick black Rind, which easily comes off from the rest when fresh. Within it is perfectly white, and full of a white milky and stinking Juice, which, when collected and dried, is what the *Persians* call *Kiing*, and the *Europeans* *Assafoetida*. The Top of this Root is furnished with a large Tuft of hairy or filamentous Matter like that on the Crown of the *Meum* or Spignel. The Leaves are very large and like those of the Piony.

The Stalk is as thick as a Man's Arm, and grows to eight or nine Feet high. It gradually becomes taper toward the Top, whence it is divided into a small Number of Branches. The Leaves stand alternately on these Stalks, and that at no great Distances from one another. The Flowers are small, and disposed in Umbels. The Seeds are flattish and striated, and of an oval Figure; they have somewhat of the *Assafoetida* Smell, but much less than might be expected. It grows in *Persia*, but there only in two Places, at least in those only in any great Plenty. These are the Mountains about *Heraat*, and the Province of *Laar*. In these Places it abounds with Juice, and yields the Gum in great Plenty, when found elsewhere it yields very little. The Leaves in these Places are of a horribly offensive Smell, and no Animal will touch them. But the People of the Town of *Disguun* affirm, that in the Country beyond them, the Plant loses much of its bad Savour, and that the Goats feed very greedily on the Leaves, and grow fat upon the Diet. Some have pretended to distinguish two Species of this Plant, the one yielding a smaller Quantity of Juice, and that of a less fetid Smell; the other yielding more of it, and that more stinking. But *Kæmpfer*, who was upon the Spot, declares the Plants to be the same, and all the Difference to be in the Soil that produces them. If what the *Persians* of *Disguun* say be true however, it very well accounts for the Difference of the *Cyrenaic* and *Persian* Kinds of *Silphium*; for the Plant in the first of these Places might be as mild as beyond *Disguun*, or even more so.

It is very singular in this Plant, that it seldom flowers; sometimes not till its twentieth, thirtieth, or even fortieth Year; during all this Time the Root is increasing in Size, and consequently it sometimes grows to an enormous Bulk; Roots of it have been seen of the Thickness of a Man's Thigh, and of a Yard and half in Length; those of the Thickness of one's Arm are frequent. When it sends forth a Stalk, and has ripened its Seed, it perishes. The Ancients made a Distinction in their *Sylphium*, as it was produced from the Stalk, or from the Root of the Plant; but at this time all that we have is obtained from the Root. They never make Incisions in Roots of less than four or five Years standing, and they always find that the older and larger the Root, the

more plentifully the Juice flows. The Gum or Juice, as it flows from the Root, is white, and perfectly resembles Cream, and has no Viscidity. On the Contact of the Air it dries or hardens, and becomes viscous and coloured. The most strongly scented Assafoetida is always esteemed the best, and *Kempfer* observes that it is so much stronger when fresh, than when kept and imported into *Europe*, that a Dram of it has more Scent than a hundred Weight of what our Druggists keep.

The Leaves of the Plant appear in Autumn, and remain green the whole Winter; in Spring they wither. About the End of *April*, when the Leaves are in their decaying State, the *Persians* ascend the Mountains in search of the Plants. They clear away the Earth about the Root for six or seven Inches deep; they then twist off the Leaves, and the fibrous Substance at the Top of the Root. They next cover up the Root again to its Top, which is now perfectly bare, and this they cover with a Bundle of Weeds to keep off the Heat of the Sun, which would otherwise destroy it. They lay a Stone over all this to keep it firm, that the Wind may not blow it off; and in this Condition they leave the Roots for a Month or six Weeks. At the End of this Time they take off the Covering, bare away the Earth a little from the Crown of the Root, and with a sharp Knife cut it transversely off, taking off about an Inch or a little more of the Top. They then cover this wounded Root with the Weeds again, making them stand hollow from the wounded Part, and thus leave them for two Days; at the End of which Time they return, and find the Top of the Root, where they had cut it off, covered with the exudated Juice or Assafoetida: This they collect and put up in proper Vessels, and clearing away the Earth a little lower, they cut off another Slice of the Top of the Root, but this not thicker than a Crown Piece, and cover it up again for another Gathering. As they take a large Compass of Ground for their Search, they are kept in constant Employment; the Roots of their first Day's Cutting being ready for their taking the Gum from, by that Time they have cut the more distant ones, which they are regularly to return to afterwards. After they have gone through this second Operation with all the Roots, and collected the second Quantity of Gum from them, they cover them up for eight or ten Days; and after having spread their Gum in the Sun to harden it, they carry it home. Four or five Men generally go out in a Company on these Expeditions; and it is a common thing for them to bring home fifty Pound Weight of it from this first Gathering; this however is esteemed but an inferior Kind of Assafoetida; after the Roots have remained covered these eight or ten Days, they visit them again, take off the Covering of Weeds, and collect the Gum. They then cut off another Slice of the Root, and after that another, and then a third; this is done at the Distance of two Days between each Operation; and the Earth is every Time cleared away to a proper Depth, and the whole Process managed as before.

After the third Collection in this second Expedition, they cover up the Roots again, and return home with their Stores, leaving them covered for three Days. After this they return to their Work, and cut them again three several Times at the same Distances of Time; and after the third Collection of this last Expedition, they leave them to perish; for they never recover this terrible Operation.

Affaetida, distilled in a Retort, yields a large Quantity of a whitish or milky looking Phlegm, smelling strongly like Garlic; there comes over near three Ounces of this from the Pound; after this there rises near an Ounce of a reddish Phlegm, partly of an acid, partly of an urinous Kind; this is followed by somewhat more than an Ounce of a thin limpid yellowish Oil, of an extremely fetid Smell, and finally there comes over near six Ounces of a reddish stinking and empyreumatic Oil of the Consistence of Butter. The Remainder in the Retort, calcined in an open Fire and lixiviated, yields about six Grains of a fixed Salt, but this not of the alkaline, but *Sal Salsus* Kind.

Affaetida has always been highly esteemed in Medicine: The Ancients give it great Praises in the Cures of all nervous Complaints, and for promoting Urine and the Menfes. They tell us also that it assists Digestion, inspires Chearfulness, and resists Putrefaction. They also gave it in Dropsies, Jaundices, Pleurisies and Asthmas, and applied it externally by way of Plaister to Wounds and Ulcers, and to cure Corns after Cutting.

In *Persia* and the *Indies* there is no Drug at this time so much in Use both in Medicine and in Sauces. They rub the Vessels they are to dress their Foods in with it, and they give it in large Doses against the Rheumatisms, the Gout, and Pains of all Kinds. With us, Affaetida is scarce at all used about our Foods, and its unpleasant Smell has in a great Degree banished it from extemporaneous Practice in Physic, though it is undoubtedly a very great Medicine. It is given in hysteric Affections of all Kinds, and to promote the Menfes, and in all nervous Complaints. Some also recommend it greatly in malignant Fevers, and in the Small Pox and Measles; it is usually prescribed in Pills, and is an Ingredient in many of the Compositions of the Shops.

CHAPTER III.

M Y R R A, *Myrrh.*

MYRRH is a vegetable Product of the Gum Resin Kind. It is sent over to us in loose Granules of various Size, from that of a Pepper Corn to the Bigness of a Wallnut. The Generality of them however are from the Size of a Pea to a little more than that of a Horse Bean. Their Figure is not more determinate than their Size; they are sometimes roundish, often irregularly oblong and contorted. The Colour of Myrrh is a reddish brown, with more or less of an Admixture of yellow. It is tolerably smooth on the Surface in the purer Pieces, and somewhat transparent; and when broken there are often seen in it orbicular or semilunar Lines of a whitish Colour. Its Taste is bitter and acrid, with a peculiar aromatic Flavour, but upon the whole very nauseous. Its Smell is strong, but not disagreeable. It is brought to us from *Æthiopia*, and is to be chosen in clear Pieces, light, friable, and of the bitterest Taste: That which is foul and blackish is to be rejected.

The Ancients were very well acquainted with Myrrh, they called it *Smyrna* and *Myrrha*. But they mention a great Variety of Kinds of it, which they have described so slightly, and distinguished so carelessly, that it is not easy to determine, what they meant by their Accounts of them. At

At this Time indeed we meet with a great Variety in the several Granules of Myrrh in the same Parcel, some being yellower, some redder, and some very strongly, some very weakly scented; these separated from one another might be kept under different Names, and be esteemed at least so many Varieties of the same Gum. It appears from this, that the Myrrh differs according to the Season, Age, Circumstances, and other Accidents of the Tree, and perhaps, as it is the Produce of the Trunk or Branches; and on these Differences it is probable the Distinctions of the Ancients might be founded.

Fuchsius is of Opinion that our Myrrh is not the fine genuine *Myrrha* of the Ancients, but only some one of their worser Kinds, but it is more probable, that they are all brought over indiscriminately to us.

Brassavolus supposes our Myrrh to be the true Bdellium of the Ancients, and their Myrrh to have been quite another Substance; and some think that what the Ancients meant by Benjamin, was the modern Myrrh: But the Bitterness of Myrrh, mentioned by all the Ancients as its great Characteristic, shews all these to be idle Opinions, and that our Myrrh is the very Drug they knew under the same Name. What has made most against the Opinion of our Myrrh being what they called by that Name is, that they greatly commend its agreeable Flavour, and were fond of impregnating their Wines with it. But this Objection will stand for nothing with those who know how changeable a thing Taste is, and who recollect that the same Ancients in their Time, and the *Indians* even now, esteem the *Assafoetida* as a very pleasant Sauce, and one of the best Smells in the World.

The great Distinction of the Ancients, in regard to their Myrrh, was that into the liquid, which they called *Stacte*, and the solid, which they called Myrrh. The liquid they divided into two Kinds; the finest was that which ran fluid from the Tree without cutting, and retained its fluid State afterwards. The other, which was somewhat less esteemed, was a fluid Myrrh, taken out of the midst of the larger Pieces of the solid Kind. We now sometimes meet with this second *Stacte* or liquid Myrrh of the Ancients; the larger Pieces of our Myrrh, when broken, often being found with an unconcreted, or fattish fluid Matter in the Middle; but we don't esteem this quite so highly as the Ancients did. They had besides these two natural *Stactes*, an artificial Kind made by pounding the fresh Myrrh in a Mortar with a small Quantity of Water, and pressing out the soft Matter, but this was less esteemed. Some have been of Opinion, that our liquid *Styrax* is the Produce of the Myrrh Tree, and is the true fine *Stacte* of the Ancients, but this is too palpable an Error to need Refutation.

The *Troglodytic* Myrrh was esteemed the finest in their Time, and ours now in Use is from the same Place; the next in Goodness to this was the *Minuean*, so named also from the Place whence they had it. But if *Dioscorides* means the same by *Myrrha Aminea* that *Galen* does by *Myrrha Minuea*, which one would hardly doubt, then the Ancients were not agreed in their Opinions, for *Dioscorides* declares this a bad Kind. *Galen* tells us also of a Gum resembling Myrrh so nearly, that it was scarce possible to distinguish them one from the other, which yet was a fatal Poison. He tells us that he had known many Lives lost by the taking Myrrh, among which was this Gum, as frequently happened. He calls this poisonous Drug *Apocalpasum* and *Apocarpasum*,

of Myrrhæ the Elixirs Distillatione oleum ad 3ij

3xvj of Myrrh gave to Water 3xiij of Gummy Extract.
The residuum gave to rectified Spirit 3ij of Resin

3xvj gave to Spirit 3v of Resinous

The Residuum to Water 3viij 3vj of Gummy Extract.
It is observable if whether Myrrh is digested in Water or Spirit,
the whole of its Smell & Taste is taken up by the Menstruum
applied first. Keenan Chemistry p. 217.

Dose of it is from ℥ss to ℥i.

sum, but we meet with no farther Account or Description of it among the Ancients, nor is it at all known at this Time.

Dioscorides also tells us of a Kind of Myrrh, as he calls it, which the Ancients knew by the Name of *Batic* Myrrh: This was not a Gum, but the Cuttings of the Root of a Tree; but with this we are wholly unacquainted, as well as with many other of the Kinds they have described.

The Tree which produces the Myrrh in Use in our Times is wholly unknown.

Myrrh, distilled in a Retort, yields a moderate Quantity of a reddish Phlegm, smelling strongly of the Gum, and having also much of the Taste of it; after this there comes over a larger Quantity of an austere and acid Liquor, of a reddish Colour, the whole amounting to not less than a fourth Part of the Weight of the Myrrh; after this comes over a small Quantity of an austere Liquor, partly acid, and partly urinous; then about an Ounce from the Pound of a thin limpid reddish Oil, smelling strongly of the Myrrh; after this near twice that Quantity of a thick Oil like Butter, of a brown Colour, and empyreumatic Smell. The Remainder in the Retort, calcined in an open Fire, yields about nine Grains of fixed Salt from the Pound of Myrrh, but this not alkaline, but of the *Sal Salsus* Kind.

Myrrh is inflammable in the manner of the genuine Resins, but then it does not perfectly dissolve like them either in Oil or Spirit. Water dissolves a much greater Portion of it than either; and indeed with proper Regulations, almost all. Spirit of Wine dissolves a Part of it, and takes a strong Tincture from it, but it leaves a large Remainder; but Spirit of Wine mixed with Spirit of Sal Ammoniac dissolves almost the whole.

The Ancients esteemed Myrrh to be very drying and detergent, and others of them celebrated it as a Resolvent. Indeed it powerfully resolves and attenuates a thick and viscid Blood, a concremented Bile, and glutinous Humours, and is good in Obstructions of the Menfes, and in Infarctions of the Viscera. It also promotes Delivery and the Expulsion of the Secundines, and is good in Asthmas, and in Cases of Tubercles of the Lungs. In the Jaundice also it has been known to do great Service, and in cachetic Complaints. It destroys Worms, strengthens the Stomach, and dissipates Flatulencies.

Externally applied, it is discutient and vulnerary; it cleanses old Ulcers, and disposes them to heal. Though Myrrh have all these Virtues, it is not to be given without Caution. 'Tis an Observation as old as the Time of *Galen*, that Myrrh will give many People the Head-ach; even the Smell of it will sometimes have this Effect. As it promotes Discharges of Blood of whatever Species also, it is by no means to be given to any Body that is subject to Diseases of that Kind, as Spitting of Blood or the like. Women in the Time of their Pregnancy also must by no means take it, lest it procure Abortion.

CHAPTER VI.

AMMONIACUM.

AMMONIACUM is of the Number of those Substances generally called Gums in the Shops, but improperly, it being inflammable, and therefore

Therefore approaching to the Resin Class, though it is so readily soluble in Water, that it evidently appears also to approach to that of the Gums. It is therefore properly a Gum Resin. It is a concreted Juice brought to us, sometimes in loose Drops or Granules, sometimes in large Masses composed of a Number of these Granules connected together by other Matter of the same Kind. The Ammoniacum in Drops or Tears, which is the purest and finest Kind, is met with in roundish or oblong Granules, or in other less irregularly shaped ones of the Size of a Horsebean or Hazel Nut, sometimes larger, often much smaller; these are of a yellowish or brownish Colour on the outside, but when broken they appear perfectly white within. They are considerably heavy, of a smooth Surface, tolerably firm in their Structure, and of a strong and pungent Smell, not disagreeable.

Their Taste is very acrid, sweetish at first, but afterwards very bitter. The Ammoniacum in Masses is met with in a Sort of Cakes of various Sizes, often very large; these are usually flat, and are of a brownish Colour, with a Cast of yellowish; when broken they appear full of Specks, of a purer Matter than the rest, and of a white or yellowish Colour; in this they somewhat resemble the Masses of Benjamin. These Specks are the broken Granules or Drops bedded in the Mass; the intermediate Matter is less pure than these, and there is often much Foulness in the Cakes; Straws, Sticks, and Dirt often separating from it in the breaking. Ammoniacum chewed between the Teeth becomes whiter than before, thrown on the Fire it burns with a bright Flame. It is brought to us from *Alexandria*.

The Ammoniacum in Tears or Drops is always to be preferred for internal Use. The other Kind is to be chosen in clean Masses, of a pale Colour, as full of the white Specks or Granules as may be, and as free from Sticks and Stones. We used to have a way of purifying the coarser Ammoniacum by dissolving it in Vinegar, straining the Matter, and inspissating it over the Fire; but a great Part of the volatile Principles of the Medicine, and consequently much of its Virtues, were lost this Way.

The Ancients were well acquainted with Ammoniacum; *Dioscorides* calls it by that Name, and *Galen* *Thymeama*. The *Arabians* call it *Raxach* and *Asfack*, the *Latin* Writers *Gutta Hammoniaca*. They had therefore probably only the loose Tears or Drops brought to them. The *Greeks* had plainly both Kinds as we have; *Dioscorides* calls the fine Kind in loose Drops *Transma*, and the more impure Kind in Masses, *Phyrama*. He tells us that it is the Gum of a ferulaceous Tree or large Plant, which grows in that Part of *Lybia* where the Temple of *Jupiter Ammon* stood; he adds, that the Shrub was called *Agasyllis*. *Pliny* however calls it *Metopion*, a Name by which *Dioscorides* has distinguished the Plant which produces the Galbanum.

We do not know much more of the History of the Ammoniacum at this Time, than this old Author did. The Plant which produces it has never been described. All that we know of it is, that it is of the umbelliferous Kind, which may easily be discovered by the Seeds frequently found in large Quantity in the large Masses, and which evidently belong to an umbelliferous Plant. They are plainly of the foliaceous Kind, and much resemble those of Dill, but that they are larger. The Gum which we have from *Alexandria* is brought thither from *Barca*, a Part of *Africa* to the West of *Ægypt*, where, as *Dioscorides* observes, the famous Temple of *Jupiter Ammon* stood.

Ammo-

Out of an Zi Rectified Spirit of Wine dissolves Zoj
Water. ————— Zoj Dy Sp.

Ammoniacum, distilled in a Retort, yields first somewhat more than three Ounces from the Pound, of a reddish clear Liquor, of a subacid Taste, and of a strong Smell of the Gum; after this comes near a third of that Quantity of an urinous Phlegm; after this about an Ounce and a Quarter of a limpid, yellowish, and sweet scented Oil; then between three and four Ounces of a thicker Oil of a reddish brown Colour. The Remainder in the Retort yields, by Calcination and Lixiviation, half a Dram of a fixed alkaline Salt from the Pound of the Gum, a much larger Proportion than any of the former Gum Resins.

Ammoniacum is in great Esteem in the modern Practice. It attenuates and resolves thick and tough Humours, softens hard Tumours, and opens Obstructions of the Viscera. It is found of vast Service in Asthmas. It also promotes the Menfes, and opens Obstructions of all Kinds. It is given sometimes in Pills, but more usually in Form of an Emulsion or milky Solution in Hyssop Water, which is called *Lac Ammoniaci*, Milk of Ammoniacum. Its Oil by Distillation is by some recommended greatly in Asthmas, but it is little used with us. The Gum itself is an Ingredient in many of the Compositions of the Shops, and is sometimes used externally in Plaisters.

Of G U M R E S I N S

Less used in MEDICINE.

CHAPTER I.

SAGAPENUM.

SAGAPENUM is of the Number of the vegetable Juices generally called a Gum, but it is truly a Gum Resin. It is brought to us in two Forms, the finer and purer is in loose Granules or single Drops, in the Manner of the fine Ammoniacum, the coarser Kind is in Masses composed of Numbers of these Drops of various Sizes cemented together by a Matter of the same Kind. In either Case it is of a firm and compact Substance, considerably heavy, and of a reddish Colour on the outside, and brownish within, and spotted in many Places with small yellowish or whitish Specks. It is so susceptible of Alteration by Heat, that it will become soft like Wax on moulding it in the Hand. If taken into the Mouth, it forms itself into a tough viscid Mass, and becomes whitish after some time chewing. Its Smell is strong and disagreeable, seemingly composed of two Scents, the one like that of the Pine, the other like Garlic, or as it were of a middle Scent between that of Galbanum and Assafoetida, with something of the Turpentine Kind added. Its Taste is acrid and disagreeable. It is inflammable, if held to the Flame of a Candle it readily takes Flame, and burns almost entirely away, and yet it dissolves in Water, though better in Wine or Vinegar; but to a Solution in

either, there requires the Assistance of Heat. We have it from *Persia*, and the *East-Indies*. It is to be chosen reddish on the outside, and such as is spotted with whitish or yellowish within. Authors mention a kind of Sagapenum white throughout, and describe it as the very best and finest Kind, but such is very rarely met with.

Sagapenum was well known to the Antients: *Dioscorides* perfectly well describes it, and tells us, it was the concreted Juice of a ferulaceous Plant growing in *Media*. This is as much as we know of it at present.

The Plant has never been described to us, but is supposed to be, as *Dioscorides* says, of the ferula Kind, from the Seeds and Fragments of the Stalks sometimes met with in the Masses of it. It would be a worthy Undertaking to sow some of these, and of the Ammoniacum Seeds, in a proper Manner, and endeavour to raise from them these hitherto unknown Plants. They are in general ripe and perfect, and if some fail in the Experiment, others may succeed: We know the Seeds of many Plants of the umbelliferous Kind will keep a long Time, and yet retain their vegetative Faculty.

A Pound of Sagapenum, distill'd by the Retort, yields first more than three Ounces of a clear Phlegm, of a reddish Colour, and subacid Taste, and of a very strong Smell, mix'd of the Garlick and the Turpentine Kind; after this about half as much of an acid Liquor, of a yellowish or saffron-like Colour, and of a more strongly acid Taste; then about five Drams of an urinous Phlegm; after this comes over near an Ounce of a clear thin Oil of a greenish Colour; after this an Ounce and a half, or more, of a bluish Oil; and finally about the same Quantity of a thick and coarse Oil, of a reddish brown Colour. The Remainder in the Retort weighs about a fourth Part of the Matter first used; and after Calcination in an open Fire, will yield by Lixivation about half a Dram of a fix'd Salt, but this not of the alkaline Kind, but a mere *Sal Salsus*.

The *Arabians*, who call Sagapenum *Sachabenegi*, and *Sechbenegi*, call it a purging Gum: The *Greeks* say nothing of any such Virtue in it. It does indeed tend to loosen the Bowels as all the Gum Resins in some measure do, but it seems not proper at all to be given as a Purge alone. Its great Virtues are those of an Attenuant, Aperient, and Discutient, and these it possesses in no common Degree; and 'tis to be lamented that it is not more in Use in the present Practice. It is good in all Disorders of the Breast that have their Origin in a tough Phlegm: It also has been found to discuss Tumors in the nervous Parts, in a remarkable manner, and to give Relief in habitual Head-achs, where almost all things else have failed. Its Dose is from ten Grains to two Scruples, but it is now seldom given alone. It has been found however to do great Things in Asthmas, in Obstructions of the Viscera, particularly the Spleen, in nervous Complaints, and even in Epilepsies. It promotes the Menfes also, and expels the Secundines.

It is an Ingredient in the Theriaca, Mithridate, and many other of the Compositions of the Shops.

3i gave to Spirit of Wine 3o gr of Resinous Extract
to Water 3ij Dij of a Gummy Extract —

It had its Name no Doubt from y^e Tree from w^h it was got, Otto Co Succus of y^e Panax Tree.

CHAPTER II.

OPOPANAX.

OPOPANAX is a vegetable Juice, approaching in some Degree to the Sagapenum before described, and usually join'd with it in Prescription. It is a Gum Refin of a tolerably firm Texture, and is brought to us usually in Form of small loose Granules, or Drops, sometimes in large Masses, form'd of numbers of these connected by a Quantity of Matter of the same Kind, but these are usually loaded with extraneous Matter, and are greatly inferior to the pure loose Kind.

The Drops or Granules of the fine *Opopanax* are usually of the Bigness of a Pea, sometimes of that of a Horsebean, often very small; they are of a brownish red Colour on the outside, and of a dusky yellowish or whitish within: They are moderately heavy, and of a somewhat fatty or unctuous Appearance; smooth on the Surface, and of a strong disagreeable Smell, and an acrid and extremely bitter Taste. It is brought to us from the *East*, and is to be chosen in clear Pieces, of a strong Smell, and acrid Taste: Such as are black, and too hard, are to be rejected. The *Opopanax*, in Masses or Cakes, is usually of this blackish Colour, and full of Sticks and Straws.

Opopanax was well known to the *Greeks*: And *Galen* tells us, that it was the concreted Juice of the *Panax Heracleum*, produced by wounding the Roots and Stalks in the great Heats: The antient botanical Descriptions however are so imperfect, that we do not know what the *Panax Heracleum* of those Times was, nor has any later Author given us any Information of the Plant, which produces this Drug, and which is at this Time wholly unknown to us.

A Pound of *Opopanax*, distill'd in a Retort, yields two Ounces and a quarter of a limpid Phlegm, of a subacid Taste, and of the Smell of the Gum; about the same Quantity of a reddish, acid, and empyreumatic Liquor; near an Ounce of a Liquor partly acid, partly urinous; more than half an Ounce of a fine, light, thin, and limpid Oil of a reddish Colour; and finally, somewhat more than two Ounces of a thick empyreumatic Oil, of a brownish Colour, and so heavy that it sinks in Water. The Remainder in the Retort, calcined and lixiviated, yields four Scruples of a fix'd alkaline Salt.

Opopanax is inflammable in the manner of the Resins, but it is soluble in Water as the Gums; it makes the Water white and milky however. It is attenuating and discutient, and is gently purgative. It dispels Flatulencies, and is good in Asthmas, in inveterate Coughs, and in Disorders of the Head and Nerves. It also promotes the Menfes, and is good against all Obstructions of the Viscera. It is but little used however in extemporaneous Prescription; in the Compositions of the Shops it is a very frequent Ingredient.

CHAPTER III.

SARCOCOLLA.

SARCOCOLLA is of all the Gum Resins that which most approaches to the Nature of the simple Gums. It is brought to us in small Granules, which are of an irregular Figure, and have the Appearance of Pieces broken off from larger ones. It is moderately heavy, and is sometimes of a whitish, sometimes of a brownish, and sometimes of a reddish Colour, of a more lax Texture than any other of the Gum Resins, very friable, of a faintish and disagreeable Smell, and of an acrid Taste, somewhat sweetish at first, but growing bitter afterwards, and so nauseous, as to promote a Tendency to vomit if held long in the Mouth. The most perfect Masses of this Drug are roundish, or oblong, and of the Bigness of a Horsebean, but it is rare to meet with any of these; the rest seem Fragments of these, and are often not larger than the Grains of a coarse Sand. Held to the Flame of a Candle it boils and bubbles first, but it afterwards takes Fire and burns with a clear white Flame. It dissolves in Water, and on chewing grows tough and viscous.

It is brought to us from *Persia*, and *Arabia*, and is to be chosen light, friable, of a lax Texture, and of the palest or whitest Colour that may be. There is sometimes a kind of Sarcocolla in Masses or Cakes met with in our Druggists Shops, but it is foul, and generally adulterated.

We are wholly unacquainted with the Plant that produces the Sarcocolla; no Author, either antient or modern, having given us any Information about it.

A Pound of Sarcocolla, distill'd by the Retort, yields near two Ounces of a limpid yellowish Phlegm, of a saline Taste, and with some of the Characters of an urinous Alkali; more than three Ounces of a Liquor partly urinous, partly acid; and near two Ounces of a fluid Oil of a brown Colour, with about the same Quantity of a black empyreumatic one, of a thicker Consistence. The Remainder in the Retort, calcined and lixiviated, yields about five and thirty Grains of a fix'd Salt, but that not of the Alkaline but of the *Sal Salsus* Kind.

Though all the antient Writers were acquainted with Sarcocolla, they are not at all agreed in the Accounts they give of its Virtues. The *Arabians* call it a Purge, and frequently prescribe it as such; but the *Greeks* mention no such Virtue in it, and only order it externally. *Galen* gives it a great Character as a Balsam for Wounds, he says, it is merely balsamic and healing without any Sharpness; and *Serapio*, on the contrary, says, it is of the Class of Catheretics, that it eats off proud Flesh in Ulcers, and when given internally exulcerates the Intestines. There are not wanting however Authors of that Nation, who recommend it internally in large Doses; and this very *Serapio* tells us, if corrected with Oil of sweet Almonds, it might be safely given to three Drams at a Time. *Hoffman* however, who had try'd it, absolutely condemns the internal Use of it. It is recommended for Ophthalmies and Defluxions of a sharp Matter on the Eyes, and is generally ordered to be dissolved in Milk for this Purpose: At present it is very little used in extemporaneous Practice, but is kept as an Ingredient in many of the old Compositions.

Out of an ℥i of Sanocolla Rectified Spirit of Wine dissolves ℥vj
of the Remainder Water took up only ℥ij

Out of another ℥i Water dissolved ℥viij ss.
of the Remainder Spirit took up 26 grains

3i with water gave 3ij ʒij of a Gummy Extract
the Residuum with Spirit gave ʒij of Resins

3i with Spirit gave 3ij of a Resinous Extract
the Residuum with Water gave ʒv ʒij of a Gummy one —

CHAPTER IV.

BDELLIUM.

BDELLIUM is a Gum Resin, in some Degree resembling Myrrh in its external Appearance, and not unfrequently brought over in no inconsiderable Quantity mix'd among it. It is met with in single or loose Drops or Granules, not concreted into Cakes or Masses; these are of a very irregular Size, some of them are as large as a Hazel Nut, many less than a Pea, and some few much bigger than the first mentioned, but these are rare; they are seldom regularly round, often crooked, and of perfectly irregular Shapes. Its Colour is a dusky brownish red, it is somewhat pellucid, moderately heavy, and considerably hard; taken into the Mouth it grows soft and tough in the manner of Mastic: Its Smell is not disagreeable: Its Taste bitterish, but not so much so as that of Myrrh. It readily takes Fire, and burns very briskly with a bright white Flame, though it crackles all the Time, and frequently throws up little Fragments of the Matter to the Surface of the Flame.

It is not perfectly soluble either in aqueous or in spirituous Menstruums: A considerable Part of it is soluble in common Water, and the Remainder may be dissolved in well rectify'd Spirit of Wine. We have it from *Arabia*: It not only comes to us among Myrrh, but often among the Gum Senegal, which it much less resembles than the former.

We are very uncertain as to the Tree which produces it. *Pliny* tells us its Bark was black, and that it grew to the Bigness of the Olive Tree, and had Leaves like those of the Oak, and Fruit like the wild Fig. Others tell us, that it is very like the Myrrh Tree, but till we know what Tree it is that produces the Myrrh, we shall profit very little from this Account. *Thevet* tells us of two thousand Trees of Myrrh and Bdellium which he saw growing in one and the same Forest, but he has given us no Description of them. *Lobel* and *Pena* found several Fragments of the Wood of the Bdellium Tree among other Things, and they describe it to be very firm and solid; its Bark black, which agrees with *Pliny's* Description; and add, that it is full of Thorns or Prickles. *Dale* conjectures from the whole, that it may possibly be the Tree described by *Plukenet* under the Name of *Arbor lactescens aculeata foliis quernis Americana Bdellifera forte, sive Arbor Bdellium ferens* in *America*.

The *Greeks* make frequent mention of Bdellium, but whether their Bdellium was the same with that of our Times, or whether it is known to us under any other Name, or is wholly lost to us, is not easily determined. *Dioscorides* mentions three Kinds of Bdellium, the first he says was a pellucid Gum, and was the Produce of a Tree, this was clean, fattish within, and easily melted with Heat, smelling fragrant while burning, and of a bitter Taste; a second Kind was black and foul, and form'd into Cakes or Masses, this had a bituminous Smell, and was brought from the *Indies*; the third was dry, livid, and resinous, and was brought from a Town call'd *Petra*. *Galen* mentions only two Kinds, a *Scythian* which was blackish, and an *Arabian* Kind which was paler, softer, and more easily melted.

The

The *Arabians* also mention two Kinds, the one from *Judea*, which *Avicenna* calls *Mochel Judaicum*; the other from *Mecca*, which he calls *Mochel Mecchense*, and which he says was not a Gum, but the Fruit of a Plant of the Palm Kind. The Moderns are not much better agreed about the Nature of Bdelium than the Antients were. Many have thought that our Myrrh is the true Bdelium of the Antients: Others have supposed what we call Anime to be it, nor have there been wanting some, who have carried it out of the vegetable Kingdom, and supposed Carbuncles and Crystal to have been meant by the Word Bdelium; all this however appears very erroneous. *C. Baubine* makes out six Kinds of Bdelium; and *Pomet* honestly assures us, that many very different Resins, among which are the Anime, and others less known, are sold in the Shops under the Name of Bdelium; but upon the whole it appears highly probable that the genuine Bdelium of our Time is the same with that of the Antients; and that such as answers the Characters established in the Description here given of it, is the first and finest Kind of Bdelium mentioned by *Dioscorides*, the *Arabian* Bdelium of *Galen*, and the *Judaic* Bdelium, or *Mochel Judaicum* of the *Arabians*. As to the six Kinds mentioned by *Baubine*, some of which are reddish, some yellowish, some blackish, and some almost whitish, with other varieties of the like Kind, it is very probable they are all the Produce of the same Tree, but differing as the several Granules of Myrrh frequently do, in Colour, and other Accidents, according to the Age and other Circumstances of the Tree, to the Seasons in which they were collected, and to the Part of the Tree they were produced from; in many Gums there appears a considerable Difference in Colour, between those Drops obtained from the Trunk, and those from the Branches.

Bdelium is universally allowed to be an Emollient and Discutient, as also a powerful Aperient and Detergent, according to its Age; for it is said to be much more emollient when new and fresh than afterwards, and to continually alter in its Qualities in keeping: When it was to be used as a Discutient, Authors have recommended such as had been kept some Years; and when merely as an Astringent, the oldest that could be had was recommended, as best fitted for the Purpose. There appears however to have been more of Fancy than Reason in all this, and at present the Drug is little used, and indeed scarce known in the Shops, though it is order'd as an Ingredient in the Mithridate, and several other of the old Compositions.

CHAPTER V.

EUPHORBIIUM.

EUPHORBIIUM is a Gum Resin, brought to us always in loose or single Drops or Granules: These are often pretty regularly round, sometimes oblong, and sometimes irregularly divaricated into a sort of Branches, light and hollow within. Its Colour is a bright yellow, between what we call a Straw and a Gold Colour. Its Surface is smooth and glossy, and it is somewhat transparent: It has no great Smell, but its Taste is violently acrid and nauseous. It is produced in the remoter Parts of *Africa*, whence it is sent to *Salle* in *Barbary*, and thence is transported into *Europe*. It

An ounce of it yielded 3v to Spirit
- - - - - 3v. to Water.

The 3ij left undissolved by the Spirit gave out 3ij to Water
- - - - - by the Water gave 3ij to Spirit

It is to be chosen dry, clean, and of a bright Colour. Its acrid Taste is the great Mark of its Goodness, and this ought to be such as to inflame the whole Mouth on only touching the Tongue with the smallest Piece of it.

The Antients were well acquainted with Euphorbium: *Dioscorides* frequently mentions it under the same Name; and the *Arabians* call it *Euforbion*, and *Thorbion*. *Dioscorides* tells us it was first discovered in the Time of *Juba*, King of *Lybia*: And *Pliny* says, that this *Juba* himself discovered it, and gave it the Name of Euphorbium, from *Euphorbus*, who was the Brother of *Antonius Musa*, Physician to *Augustus Cæsar*, and who was Physician to *Juba*. *Salmasius* however sets aside all this, by observing, that this very Drug is mentioned in a Poem of *Meleager*, who was Cotemporary with *Menippus* the *Cynick*, and lived long before the Days of *Juba*, or of *Augustus Cæsar*.

The Plant which produces the Euphorbium is one of the *Polyandria Monogynia* of *Linnaeus*, and one of the *Herbæ flore tetrapetalo anomalæ* of *Ray*. It is described by *Commelin* under the Name of *Euphorbium Antiquorum verum*, and in the *Hortus Malabaricus* by the Name of *Schadida Calli*.

It grows to ten or twelve Feet high: Its Root is long and thick, and is cover'd with a double Rind, an outer one brown, and an inner one of a milky white. The Stem, which arises single from the Root, is of a trigonal or quadrangular Figure; it is divided as it were into several Joints, by certain Knots placed at regular Distances; the Edges of the Stem, between these Knots, are armed with numerous very sharp Prickles: It is thick and tender, consisting of a thick Rind, of a greenish brown Colour, and a soft pulpy Matter underneath it, which abounds with an acrid milky Juice. The main Stem sends out a great number of Branches, but these are naked, having no Leaves, properly so call'd, on them; though there are certain little round thick whitish Appendages that grow near the Infertion of the Thorns, which some improperly have call'd so.

The Flowers are placed in the Parts of the Plant between where the Thorns stand, and generally grow three upon each Pedicle, the upper one ripening first, and then the two others; the Fruit which succeeds these is a Seed-Vessel containing three Seeds.

We not unfrequently meet with Parts of this Plant such as Fragments of the Stem, with the Thorns and dry'd Flowers, and even Seeds in the Parcels of Euphorbium brought over for Sale, which sufficiently prove that this is the very Plant which produces it.

It is common to *Africa* and the *East-Indies*, and is no where more plentiful than on the sandy Deserts behind the Coast of *Malabar*; but the *Africans* are the only People who are in the Secret of collecting the Gum.

A Pound of Euphorbium, distill'd in a Retort, yields first near two Ounces of a limpid Phlegm, of an acrid and burning Taste, but with no Mark either of acid or alkali, and of a disagreeable Smell, not unlike that which proceeds from the Distillation of common Oil; after this comes a somewhat larger Quantity of a reddish but limpid Phlegm, of an acid Taste, and empyreumatic Smell; then about six or seven Drams of a Liquor, partly acid partly alkaline, and plainly of an urinous Kind; after this there comes over between five and six Ounces of an Oil, partly thin and limpid, partly brown and thick. The

Remainder

Remainder in the Retort, calcined in an open Fire and lixiviated, yields near a Dram and a half of a fix'd Salt of the alkaline Kind.

Euphorbium was known to the Antients, but they seem not to have been acquainted with the internal Use of it. The People of *Malabar*, though they know nothing of the Gum, prepare a Plaister of the bruised Root of the Plant, mix'd with *Affæœtida*, which they apply externally to Children's Bellies to destroy Worms. The later *Greeks*, and the *Arabians*, have given it great Praise as a Purger of watery Humors, and as such it is at this Time sometimes, though very rarely used. We principally use it externally in Sinapisms, and Plaisters apply'd to the Feet, which are intended to stimulate, but not absolutely to raise Blisters.

Serapio and *Avicenna* observe, that when taken in too large Doses, it has been found to exulcerate the Intestines, and bring on Death itself, after the most terrible Symptoms.

Artificial vegetable Productions

Used in M E D I C I N E.

C L A S S the F I R S T.

INSPISSATED JUICES.

THE Bodies of this Class, arrang'd according to their more or less frequent Use in Medicine, will stand thus.

The inspissated Juices more frequently used are,

- | | |
|--------------|---------------------|
| 1. SCAMMONY. | 4. OPIUM. |
| 2. ALOES. | 5. CATECHU. |
| 3. GAMBOGE. | 6. LIQUORICE JUICE. |

The inspissated Juices less frequently used are,

- | | |
|----------------|--------------|
| 1. ACACIA. | 2. HYPOCIST. |
| 3. ELATERICUM. | |

INSPISSATED

Dose from 1/2 to 1 Grain.

If a wetted finger touches it, it grows milky.

The Aleppo Hammony contains more Resin & less Gum than that of Smyrna.

INSPISSATED JUICES,

More frequently used in MEDICINE.

CHAPTER I.

SCAMMONIUM,

Scammony.

SCAMMONY is a concreted vegetable Juice, partly of the Resin, partly of the Gum Kind. We have two Sorts of it in the Shops, distinguished by Names formed of those of the Places from whence they are brought, but both are the Produce of the same Plant. The one Kind is the *Aleppo*, the other the *Smyrna* Scammony.

The *Aleppo* Scammony is brought to us in Masses of various Sizes, and of a perfectly irregular Shape. - It is of a spongy or cavernous Texture, light and friable. Its Colour is a dark grey approaching to Blackness. Its Surface is naturally even and smooth between the Holes, and when fresh broken it is somewhat bright and glossy, when powdered it becomes of a pale Ash Colour. It is of a faint disagreeable Smell, and its Taste is bitterish, very nauseous and acrimonious. It is brought to us from the Place the Name of which it carries, and is collected in the Country thereabout in considerable Abundance.

The *Smyrna* Scammony is considerably heavy, and of a black Colour. It is harder than the *Aleppo* Kind, and of a much stronger Smell and Taste, otherwise it much resembles it. This Kind of Scammony is brought to us from *Smyrna*. It is carried thither from *Crete* in *Galatia*, and from *Cogni* in *Cappadocia*, where there is a very great Quantity of it annually collected; the *Smyrna* Scammony is less esteemed than the *Aleppo* Kind. In general Scammony is to be chosen friable, and easily powdered, glossy when fresh broken, and such as grows white on being moistened with the Spittle, or any other aqueous Fluid, such as is not too violently acrimonious in its Taste, and such as is free from Dirt, Sand, and other Foulnesses. These are Characters which will lead every body to chuse the *Aleppo* Kind, the *Smyrna* Sort being hard and often foul.

The Plant which produces the Scammony is one of the *Pentandria Monogynia* of *Linnaeus*, and one of the *Herbæ fructu sive singulari flore monopetalo* of *Ray*. It is described by *Morrison* and others under the Name of *Convolvulus Syriacus et Scammonia Syriaca*. Its Root is thick and large like that of Bryony, black on the Surface, and white within, and it is full of an acrid milky Juice; from this arise Stalks weak and trailing, three or four Feet high, and beset with triangular Leaves like those of the common Field Bindweed. The Flowers grow from the *Alæ* of these, and are large, bell-fashioned, and whitish, with a purplish or yellowish Tinge. The Seed-Vessel is of a pointed Form, and the Seeds themselves angular and blackish. It loves a fat spongy Soil, and grows in great Abundance in many Parts of *Natolia*.

The Ancients were very well acquainted with Scammony; they called it by the same Name *Scammonia*, and the later *Greeks* *Dacrydium*. Whence *Cælius Aurelianus* and others have called it *Diacrydium*, and by Corruption in the spelling, *Diagrydium*. The *Arabians* call it *Sachmunia* and *Scammonia*. *Dioscorides* has given a very accurate Description of the Plant which was said to produce it in his Time: This does not perfectly agree with our Scammony Plant, but was a different Species of the same Genus. He describes it as having hairy Leaves, whereas those of ours are smooth: He recommends the *Myfian* Scammony as the best, and condemns the *Syrian*, which he says was heavier than the *Myfian*, and was often adulterated.

It is to be observed, that *Tournefort*, while on his *Levant* Voyage, observed this hairy Species of the Scammony Plant described by *Dioscorides* in the very same Place *Myfia*, and also about *Smyrna*, and in the Islands of *Lesbos* and *Samos*, and found that a Kind of Scammony was at this Time collected from it, and sold into *Europe*, though greatly inferior to that of the genuine Scammony Plant. It is probable indeed from the great Difference we find in the several Parcels of Scammony kept by our Druggists, both in regard to their Appearance and Virtues, that the People on the Spot collect indiscriminately the Juice of several different Plants of the *Convolvulus* Kind, and send it away under the Name of Scammony. The *Smyrna* Scammony we find was always bad, *Dioscorides* setting it as much below his *Myfian* Kind, as we do below our *Aleppo* Sort. *Tournefort* is of Opinion that the *Aleppo* Scammony is the Produce of the smooth leaved *Syrian Convolvulus*, and the *Smyrna* Kind at this Time, though not in the Days of *Dioscorides*, from the rough leaved Species. But Consul *Sherard*, who had observed the rough leaved Plant about *Smyrna*, affirms, that no Scammony was ever prepared from it there, for that the other or smooth leaved Kind was also very plentiful thereabout, that it amply supplied whatever was wanted of it.

The People of *Smyrna* prefer the Plants which grow on the Declivity of the Mountain on which the Castle stands, for the obtaining Scammony from. The Manner of their procuring it is this, they take away the Earth from about the Root to a little Depth, and then wound the naked Part with a Knife, cutting pretty deep into it. They apply Muscle Shells to the wounded Part into which the milky Juice that flows in considerable Plenty is received; they let it remain in these Shells till dry, and they then reserve it principally for their own Use: For what we have from *Smyrna* is first brought thither from the Places mentioned before, where, according to the Accounts of the People who bring it, and who were carefully examined about it by Mr. *Sherard*, it is all collected also from the smooth leaved Kind.

The Scammony procured in the Neighbourhood of *Smyrna* is much purer and finer than what comes to us. It is compact, somewhat pellucid, and of a yellowish white Colour like Refin. *Lobel* and *Pena* mention this Sort of Scammony, but we know nothing of it in the Shops. We are not informed of the Manner in which what is sent to us is collected, but it is probable that some of it is the hardened Juice flowing from the Wounds of the Root, and some of it the expressed Juice of the Root dried in the Sun. *Dioscorides* tells us of two Ways in Use in his Time, the one of which was the hollowing away the Top of the Root to make a Cavity for the Juice to concrete in,

It is sometimes adulterated by adding Resin & some Purgings Powders, w^{ch} is easily detected
by mixing it wth Spirit of Wine, for wth Resin dissolving wth Powders will appear.

neither Stalks, Leaves, flowers or seeds seem to have any
Purgative Quality. Medical Observ. & Enquiries Vol. 1 p 19.

Bontane says only three fourths.

Noceat namq^{ue} plurimum Scammoniata nativibus, lactiq^{ue} admixta aliquando.
exhibita puerum convalescent. Bellonij Opera. Edit 4^{ta}. Vol. 1. p. 18.

Scammonium ventriculo inimicissimum, arcendum hinc et illis qui Stomachum habent debilem.
Hoffm. de Medicam. infensis.

in, the other the receiving it on Walnut Leaves placed in little Hollows made in the Earth.

Mesue tells us of four different ways of obtaining it, according to which the Scammony was of different Value; the one of these was by cutting into such of the Roots as naturally stood in part bare above the Ground, and daily receiving the Juice that ran from them. Another was the taking up the Roots, cutting them, and drying the Juice that was thus separated from the several Pieces. This was often done to those Roots, which had before bled as much as they would do while in the Earth; after this the Pieces thus cut were pressed, and the Juice thus obtained from them was dried and made a third Kind of Scammony; this was black, firm, and heavy; whereas the other two were friable and paler coloured; and finally the fourth Way was to bruise the Stalks and Leaves of the Plant, and express the Juice that Way; this they dried in the same Manner as the others, and it made a Sort of Scammony, but it was foul, and of a greenish black Colour, and much inferior to the others. How many of these Ways may be now in Use with the People who procure us the Scammony of the Shops, is not easy to say.

Scammony chemically analysed affords, by Distillation in the Retort, first a small Quantity of a thin limpid Liquor of an acrid Taste, but giving no Proofs on Trial of its containing any thing either of an alkaline or acid Nature; after this comes over a large Quantity of a Liquor manifestly acid; then a small Portion of a Liquor partly acid, and partly urinous; and finally a large Share of a thick and coarse Oil of an empyreumatic Smell.

Scammony is so much of the Resin Kind, that five Sixths of pure Resin may at any Time be prepared from it by Solution in Spirit of Wine. Water makes an imperfect Solution of the whole as it does of Gamboge, but the Liquor is milky and foul with it.

The *Greeks* ranked Scammony among the stronger Purges; the *Arabians* were very fond of it, and *Mesue* in particular calls it the greatest of all Purges, and by Way of Eminence, sometimes *the Purge*. It is at present also in great Esteem and frequent Use, and would be more so, if it were more to be depended upon: But there is so much Difference in the purgative Virtue of some Masses of Scammony and that of others, that it is seldom depended upon alone in extemporaneous Practice. It is however an Ingredient in many Compositions of the Shops; and these are prescribed with other Cathartics for the purging ferous Humours.

Scammony in general however is a better Purge for robust People than for those of more delicate Constitutions; though with the Correctives with which it is joined in the *Pulvis Cornachini* and the like, it is given with Safety and Success to Children. The Ancients gave it in much larger Doses than we venture to do at present. *Galen* set on Foot a Preparation of Scammony intended to correct it, which was the baking it in a Quince; we retain it to this Time, and call the Scammony thus prepared *Diagrydium*, but it is of very little Consequence.

The chemical Writers have given us many Preparations of Scammony, among which are a Tincture and a Resin; but the Scammony in Substance is preferable to either; for they both irritate more, and yet purge less; the Resin itself given in an equal Dose with the crude Scammony will give fewer

Stools, and those attended with greatly more Gripings. The Ancients used Scammony externally for cutaneous Eruptions, and to soften hard Tumors; but at present it is used only as a Purge.

CHAPTER II.

SUCCUS ALOES,

Aloes.

AL O E or Aloes is an inspissated vegetable Juice, of which we have three Kinds in common Use in the Shops, very different from one another, and produced from different Plants, though of the same Genus. The three Kinds of Aloe are distinguished by the Names of the *Socotrine*, the *Hepatic*, and the *Caballine*.

The Ancients were, properly speaking, acquainted but with one Kind of Aloes, though they distinguished it into two Sorts according to its Purity. The finer Aloes they called by the Name of *Hepatic*, because of its being of a yellowish red, or Liver Colour. The other was foul and dirty, and was, according to their own Account, only the Settlings and Residuum of the *Hepatic*, or pure fine Aloes in the Preparation of that Drug. In after times the People who treated of Medicines enlarged the Distinction into three Kinds, two of them greatly inferior to the other finer Kind.

The *Socotrine* or finest Aloe is a resinous Substance, brought to us in irregularly shaped Masses, often of eight Ounces, a Pound or more in Weight, though usually much smaller, great Quantities of it coming over in Masses, the largest of which does not exceed the Bigness of an Egg. It is moderately heavy, and is of a dusky purplish Orange Colour in the Lump, but of a fine bright Saffron like yellow when powdered. It is of a glossy Surface, very pure, and in some degree pellucid. It is naturally of a fatty Nature, and though in cold Weather hard, dry, and friable, yet in Summer it is often viscid and clammy in some Parts, and at any time will soften a little, and become viscid on being held long in the Hands. Its Smell is strong and of the aromatic Kind, somewhat approaching to that of Myrrh. Its Taste is bitter, but it has somewhat very aromatic in it, and is not nearly so disagreeable as the rest.

The second Kind, or *Hepatic* Aloe is much inferior to the former. It is of a dusky yellow Colour, heavier, and less pellucid. It has a somewhat glossy Surface when fresh broken, but much less so than the *Socotrine*. It is of a disagreeable Smell, and of an extremely bitter and nauseous Taste, without any thing of the fine aromatic Flavour of the other. When powdered it is of a browner yellow. It is brought to us in large Cakes of many Pounds Weight.

The third or worst Kind of Aloe, called *Caballine* Aloes in the Shops, is easily distinguished from the other Kinds by its abominable Smell. It is often so pure and clean as to equal the *Socotrine* Aloes in that Respect, but it is of a duskier or browner Tinge with the yellow. It is considerably heavy, and somewhat harder than the *Socotrine* or the *Hepatic* Kind, and when powdered is of a

browner yellow Colour, and is apt to concrete into a solid Lump again in keeping. The Taste of this Kind is execrably bitter and disagreeable.

The Plant which produces the *Socotrine* Aloes is very different from that which yields the others. It is one of the *Hexandria Monogynia* of *Linnaeus*, and one of the *Herbæ bulbosæ affines* of *Ray*. It is described by Authors under the Name of *Aloe Succotrina angustifolia spinosa flore purpureo*, and *Aloe Ananæ folio flore suave rubente*. Its Root is tuberous and covered with a thin grey Rind. The Leaves are a Foot and half long, narrow, thick, and juicy, terminating in a large Prickle, and armed with other small ones on the Edges. The Stalk rises in the midst of these, and is near two Foot high. It is naked on the lower Part, but at the Top it has a Cluster of Flowers in Form of a Spike, which are oblong, tubular, divided into six Segments at the Rim, and of a beautiful red Colour. The Seed-Vessel which follows these is of a triangular Figure. It contains three separate Cells, and in them a large Number of Seeds. The Leaves of this Plant cut across yield a fine yellow and bitter Juice of an aromatic Flavour.

The Method of procuring the Aloes of the Shops from this Plant is this; they cut off the Leaves near the Root, and press them gently but for a considerable time, by degrees encreasing the Force a little as the Droppings of the Juice seems to begin to cease. The Juice is received into an earthen Vessel set under the Press, and when it has stood a Night to settle, it is decanted into other flat Vessels, where it is exposed to the Sun to dry and harden; and when sufficiently firm, it is packed up in Cases made of Skins and sent over to us.

This is the Kind of Aloes the *Greeks* called *Hepatic*; they had it from the same Place that we have, the Island of *Socotora*; but they had no other Idea connected to the Term *Hepatic* when applied to Aloes, but that of the very finest and best Kind, and therefore they called this *Socotrine* Kind by that Name.

The *Hepatic* Aloes of our Times and the *Caballine* Kind are both procured from one and the same Plant, which is of the same Genus with the former, and is described by all the botanical Writers under the Name of *Aloe vulgaris*. Its Root is long and furnished with yellow Fibres. Its Leaves are two Feet or more in Length, and three or four Inches broad, and an Inch thick. They are dentated at the Edge, and they terminate in a very large and sharp Thorn, the several Indentings at the Sides being also armed with smaller Prickles. The fleshy Part of these Leaves is soft, sweet, and glutinous, resembling a pellucid Jelly; but there run through it at certain Distances a Number of Vessels containing a yellow and intensely bitter Juice. The cortical Part also is full of these Vessels which yield the same yellow Juice, and which when separated readily comes into a hard and solid, reddish, yellow, resinous Matter. The Stalk grows to four, five, or more Feet in Height, and generally is divided into two or three Branches. The Flowers stand in long Rows on these, and are tubular, and divided into six Segments at the Edge; they are yellow, but they are variegated with long Lines or Streaks of a bright green. The Seed-Vessel is of a trigonal Form, and has three Cells full of Seeds.

This

This Species of Aloe is common to the *East* and *West Indies*; and the Aloes is prepared from it in many Parts of the *East Indies*, as in *Cambaya*, *Bengal*, &c. and in several Parts of *America* also, as in new *Spain*, the *Brasils*, and *Barbadoes*.

The Method of preparing the two Kinds of Aloes from the Plant is this; they cut the Leaves to Pieces, and bruise them in Mortars; they then put them into Vessels, where they leave them for three Weeks or more. In this Time a large Quantity of Scum arises to the Surface, which is of no Use, and is thrown away; and the Leaves being taken out, the Juice is suffered to subside; after which its finer Part is poured off, and exposed to the Sun in flat Vessels, in which it concretes by degrees into Cakes, and makes what we call *Hepatic Aloes*; the Fæces at the Bottom are poured off into other Vessels and dried separately by the same Means, and these afford what we call the *Caballine Aloes*. The former Kind has the Name *Hepatic* from its being of a Liver Colour; and this last is called *Caballine* or Horse Aloes, from its being principally sold to the Farriers to be used for Horses.

There have not been wanting People, who have asserted, that the *Hepatic Aloes* is better than even the *Socotrine* for internal Use; but the general Opinion gives it greatly in Favour of the *Socotrine*, which is the only Kind now used by Persons of Credit in the Preparation of Medicines. There are some who, for Cheapness Sake, make their *Tinctura Sacra* of the *Hepatic Aloes*; but it is vastly more disagreeable to the Taste, and much more apt to miss of its Effect, than that which is made with the *Socotrine*. *Bolduc*, who experimented very carefully on Aloes, found a great Deal of Difference between the *Socotrine* and *Hepatic* Kinds: He found that the fine *Socotrine Aloes* contained a much greater Proportion of gummy Matter, and much less Resin than the *Hepatic*.

Four Ounces of *Socotrine Aloes*, kept in a sufficient Quantity of Water for some Hours in a Sand-Heat, will appear to be totally dissolved in it; but on setting it to cool, the resinous Part of the Drug will separate itself to the Bottom of the Vessel: The four Ounces of the *Socotrine Aloes* yield seven Drams of this Resin when separated and dried, and this is totally soluble in rectified Spirit, except a little earthy Matter which had probably been accidentally received into the Juice while drying, not ever any Part of the Plant. The Spirit evaporated from this leaves it a fair inflammable Resin, and the Water evaporated from the other Solution, leaves a gummy Extract of more than two Ounces in Weight.

Four Ounces of *Hepatic Aloes* treated in the same manner afford two Ounces of a resinous Sediment at the Bottom of the Solution; Spirit of Wine dissolves so much of this as to yield eleven Drams of a pure Resin; the Remainder of that Sediment being a Mixture of Foulness, and of an essential Salt of the tartarous Kind: The gummy Extract made by evaporating the Solution of this Quantity of *Hepatic Aloes* weighs about eleven Drams.

It is observable that there is a considerable Waste in the going through both these Processes, which proves that the Aloe has many volatile Parts; but that the *Socotrine* has a much more considerable Share of them than the other, since the Loss in the Process with that is near an Ounce in four Ounces, and that in the Process with the *Hepatic*, is but five Drams.

Out of sixteen ounces of Aloes Rectified Sp^t dissolved near fifteen
from the Residuum Water took up about a dram
Water applied first dissolved out of 3xvj. 3xvij^{ss}, 1st of Wine dissolved
an ounce & half of the Residuum -

12 Unces Socotrine Aloes yielded. { Gum. 3ij almost.
Resin 3ij

Hepatic Aloes . . . Gum 3viij
Resin . 3iv

Capalline Aloes . . . Gum. 3ij
Resin 3ij

One of the most common Preparation of Aloes is the Aloe Colica or
Depurata, This is made by boiling gently good Socotrine Aloes with a
proper Quantity of Water, filtering the Solution, & inspissating it
by the heat of a Water-Bath to the Consistence of an Extract,
if this be made wth expressed juice of Violet Flowers it is called
Violata, if wth Rose Leaf Juice, Aloe rosata —

The Resin of the Aloes proves scarce at all purgative, the gummous Extract possessing all the Virtues of that Kind, and operating much more strongly in this separate State than when in Conjunction with the Resin in the natural one.

The *Socotrine* Aloes proves, upon a fair Trial, to be a much brisker Purge than the *Hepatic*, which is not wonderful when we consider how much larger a Share of volatile Parts it possesses, on which that Virtue may very rationally be suppos'd in a great measure to depend; the *Socotrine* Aloe is therefore on all Accounts to be prefer'd to the other Kinds for internal Use, but the *Hepatic* for external, as being more balsamic. Some very great Names of a late Date have appear'd for the old Doctrine of the *Hepatic* being fittest for internal Use also, as a less violent Purge than the other; but we do not find the *Socotrine* attended with any peculiar bad Consequences, under proper Management, and all the Difference between them, as to Strength, is that the *Socotrine* may be better depended upon to answer the Purposes for which it is given. All the Aloes will sometimes purge too violently, but the *Socotrine* is no more apt to do this than any other, and it is a vastly less disagreeable Medicine to the Palate.

A Pound of *Hepatic* Aloe, distill'd in a Retort, yields first about a quarter of an Ounce of a limpid Phlegm, insipid, and without Smell; after this about three Drams, or somewhat less, of a limpid Phlegm, of a sub-astringent Taste, containing some Portion of a volatile Alkali; after this comes over between five and six Ounces of a Liquor, partly of an acid, partly of an urinous Taste, and at first colourless, and of a bituminous Smell, afterwards reddish and empyreumatic; and finally, after this near an Ounce of a thick Oil, almost of the Consistence of a Syrup, so heavy as to sink in Water, and of an acrid and pungent Taste, but all this while no Bitterness in any of the Products. The Remainder in the Retort, being calcined in an open Fire, yields near two Drams of a fixed Salt, but that not of an alkaline Nature, but a mere *Sal Salsus*.

Aloe has been a Medicine famous in all Times for its Virtues, as well internally as externally used. The Antients give it great Praise as a purgative; and add, that it strengthens the Viscera; and externally they esteem'd it one of the greatest Balsamics and Vulneraries known. We find it at this Time a very useful Cathartic, but it is best given in moderate Doses, and even, if we want it to operate more briskly than such Doses will do, it is better to join other Cathartics with it, than to encrease the Dose of it.

The Antients all condemn the giving it in too large Quantities, but they allow of such as moderate ones, as would appear very monstrous ones to us.

Dioscorides, who says much of the Mischief Aloes may do in a too great Quantity, yet allows three Drams of it to be given as a Purge: At present we rarely give more than from one Scruple to two; but the usual Way of prescribing it with us is not in Substance, but in Form of the Tincture in Wine, which is call'd *Hiera Picra*. It is also an Ingredient in many of the Compositions of the Shops. In whatever Form it is given, it purges off a large Quantity of bilious and pituitous Humors, promotes the Menfes and Discharges by the hæmorrhoidal Vessels, and is good against Obstructions of the Liver, Spleen, and Mesentery. It promotes Digestion and gives an Appetite, and is a very powerful Destroyer of Worms.

It

It is good also in all chronic Cases arising from Obstructions of the Viscera, but with all its Virtues, there are Cases in which it may do much Harm, and Caution is necessary to be observed in the administering it. It is not to be given at any Time to People subject to spitting of Blood, or to Hæmorrhage of any Kind, and it is to be avoided in all acute and inflammatory Distempers; and Women with Child are also to avoid the Use of it for fear of Abortion.

CHAPTER III.

GAMBOGIUM,
Gamboge.

GA M B O G E is a concreted vegetable Juice, partly of a gummy partly of a resinous Nature. It is brought to us in Form either of orbicular Masses, or of cylindric Rolls of various Sizes, according to the Fancy of the People who have made it up. It is considerably heavy, of a dense, compact, and firm Texture, and of a very bright and beautiful yellow Colour. It is of a clean and glossy look, but not at all transparent. It has scarce any Smell, and as to Taste, when first taken into the Mouth, it has no other than that of Gum Arabic, or Tragacanth, but after it has been held there some Time, it is found to have a considerable Share of Acrimony. It is inflammable, and it is soluble in Spirit of Wine, and also in Water, which last Menstruum it renders however turbid and yellow: Indeed it is a disputable Point, whether what is call'd a Solution of it in Water be truly such, or whether it be not rather a mere Separation of its Parts, for after subsiding the Water is left clear, and the Gamboge all gets to the Bottom of the Vessel. Gamboge is brought to us from many Parts of *Cbina*, and the *East-Indies*, and also from some Parts of *America*. The Place whence it is chiefly brought is *Cambaja*, in the *East-Indies*, call'd also *Cambodja*, and *Cambogia*, and from thence it has obtained its Names of *Cambadium*, *Cambogium*, and *Gambogium*, besides which it has a multitude of others, given it also from the same Occasions, and from the Form of Drops in which it is procured from the Tree, such as *Gummi de Goa*, *Gummi Peruianum*, *Gummi Gutta*, *Gutta Gamba*, *Gutta Gamandra*, and *Gummi de Geum*, beside which, some have from its Colour call'd it *Chrysonum*, some from its purgative Virtues *Gummi laxativum*, and *Scammonium Orientale*, and some from its supposed Virtues against the Gout in particular *Gutta ad Podagram*.

Gamboge was wholly unknown to the Antients, it is indeed but very lately that it has been at all known in *Europe*, and it is now much more esteem'd by the Painters, in water Colours, than by the Physicians. *Clusius* first received it in the Year 1603, and soon after this it began to get into Use in *Europe* as a Medicine; after which, the Roughness of its Operation rendering it less esteem'd as such, it got into Use in Painting, where it yet retains its Credit. It is to be chosen pure and clean, free from Sand, or any other Foulnesses, of a bright but not too deep yellow Colour, and such as readily burns, and readily communicates its Colour to Water.

Authors were a long Time divided in their Opinions, as to the Origin of Gamboge. *Clusius* gave it as his Opinion, that it was the express'd Juice of the *Euphorbium* Plant: Some imagined from its Colour, that it was a Juice

Alcor (inquit Torneus Tom 1. Cap. 57) adeo Aperit Ora Venarum & Hamorrhoides adeo
inducit, ut ex sententia hac utentibus Nonaginta Hamorrhoidibus laborant.

Out of Sixteen ounces rectified Spirit of Wine takes up. 3xix
Water 3xiiij

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Juice exprefs'd from fresh Rhubarb; some supposed it the Juice of the *Beidelsar* of *Alpinus*; and many have esteem'd it a Composition of Scammony, and the Juice of some of the Tithymals. *C. Baubine* imagined it the exprefs'd Juice of the *Ricinus Indicus*, and *Rosenberg* believed it the Juice of the Root of that Plant, colour'd with Turmeric and then dry'd. *Hoffman* imagined it also to be the Juice of the Seeds of that Plant, colour'd with the Juice of Rhubarb. *Bontius* gives us something that has the Air of a more certain Account, when he says, that it is the Juice of a kind of Tithymal, which grows in *Cambodia*, and which climbs up the tallest Trees in the manner of Ivy, growing up above their Tops; but *Bontius* only speaks by Hearsay in this, he never saw the Plant he speaks of, nor indeed does any such Plant yield the Gamboge.

Gamboge is in Reality the Produce of two Trees, both call'd by the *Indians* *Carcapulli*. These are both of the same Genus: They are of the number of the *Arbores Pomiferæ fructu Corticoso Molliore* of *Ray*. The first of them is call'd the *Carcapulli* of *Acosta*, and is described in the *Hortus Malabaricus* under the Name of *Caddam Pulli*. It is a tall and large Tree, spreading into a multitude of Branches, and those very full of Leaves. Its Stem grows to such a Size, that two Men can sometimes hardly fathom it; the Wood is white, the Bark also is whitish, or yellowish within, but of a reddish Colour on the outside, and somewhat blackish just at the Surface. The Leaves stand in Pairs, and are of an oblong Figure, broadest in the Middle, and smaller at each End, and terminate in a Point inclining to one Side; they are of a thick and firm Texture, and of an acid Taste. The Flowers are small, and consist of four roundish Petals; they are of a yellowish red Colour, and they stand on the Extremities of the Branches. The Fruit is large, of the Bigness of an Orange; yellow, and ornamented with eight, nine, or ten prominent Ribs, and with a Crown on the Head: When these Fruits are thoroughly ripe they lose their Yellowness, and become white; they are of a sweetish and somewhat acid Taste; the Seeds are contained in the midst of the Pulp, and are flatted and of a bluish Colour.

The other Species of this Tree is the *Carcapulli* of *Dr. Bry*, and others, and is described by *Herman* in his Notes on the *Hortus Malabaricus* under the Name of the *Kanna Ghoraka*, *id est*, *Ghoraka dulcis Curgalensibus*, the other being call'd simply *Ghoraka*. This is wholly like the former in every Respect, except that the Fruit is not larger than a Cherry.

Herman informs us, that both these Trees being wounded in the Trunk and Branches, afford the Gamboge, but that which is obtained from the last Species is prefer'd, as being much milder in its Operation than the other. They both grow in the Island of *Ceylon*, and in *Cambaia* and *China*. *Dr. Richer* met with a Tree in the *American* Islands, particularly in *Cayenne*, which was of the Size of an Oak, and which naturally exsuded a Juice perfectly the same with Gamboge. By the Size of this Tree it may have been the same with one of the *East-Indian* Kinds, but we have no Description to assure us of that. In the *East-Indies*, after they have wounded the Trees, they let the Juice, which runs out, harden a little in the Sun, and when it is of the Consistence of Wax, they work it up in their Hands, and form it into the Cakes and Rolls we see it in; after which they expose it to the Air till perfectly dry, and then they send it abroad.

Arnold Syen, in his Commentaries on the *Hortus Malabaricus* is for saving the

the Credit of *Bontius*, by making two Kinds of Gamboge: He tells us, that the Gamboge procur'd from these Trees is different from the common Kind, which he says is procur'd from the Plant described by *Bontius*, but this is unwarrantable; and *Hermans*, who was upon the Spot, declares against it. Gamboge is not used in Medicine in the *East-Indies*, but only as a Paint; they dissolve it in Linseed Oil for this Purpose; but the Painters know its Virtues as a Purge however, and when they have a mind for a Dose of Physic, they sometimes swallow a little of their yellow Colour. The Fruit of the first Kind, which is of the Size of an Orange, is in great Esteem in the *East*, both in their Foods and as a Medicine. It is dry'd and carried all over the Country, they give it to Women who have the *Fluor Albus*, and to Men who have Stillicidia from excessive Venery, and it is said with great Success. It is somewhat singular, that the Fruit of a Tree, whose Juice is a violent Purge, should be astringent.

A Pound of Gamboge, distill'd in a Retort, yields first a little more than an Ounce of a somewhat turbid Liquor, of an austere and subacid Taste, and with much the Smell and Flavour of bitter Almonds; after this comes over about an Ounce and a half of a reddish acid Liquor, of an austere Taste, and very pungent on the Tongue; after this about an Ounce and a quarter of a brownish Liquor, partly acid and partly urinous; then a little more than two Ounces of a limpid and thin Oil of a brownish Colour; and finally about three Quarters of an Ounce of a thick Oil, heavier than Water. The Remainder in the Retort is a light and spongy black Coal, which calcined in an open Fire and lixiviated, yields about twelve Grains of a fix'd Salt, but that of the *Sal Salsus*, not of the alkaline Kind. Gamboge held to the Flame of a Candle when it takes Fire burns with a white strong Flame, but with a great deal of Smoak; also when dissolved in Spirit of Wine the Solution is not perfect, for there remains about a sixth Part untouched by that Menstruum, but this is readily taken up by Water, or by Oil of Tartar. Gamboge being dissolved in Water, on mixing the Solution with Oil of Tartar, or with Lime-Water, a red Colour is produced instead of the yellow one, from the Expansion of the sulphureous Parts, in the same manner as it is produced by mixing either of these Liquors with a Solution of mineral Sulphur.

Some have imagined from a Solution of Gamboge turning Syrup of Violets green, that this Gum must contain a large Portion of an alkaline Salt, but no such Salt appears on the Analysis; and as to the green Colour which is supposed to indicate it, it is no other than what is produced by mixing any other blue and yellow Colours together.

Gamboge is a very rough and strong Purge, it operates both by Vomit and Stool, and both Ways with a great deal of Violence, but yet without griping; and it operates almost instantaneously on being swallow'd. The Violence of the Operation of Gamboge has made many condemn it, and speak very vehemently against its Use; but among these very People several have afterwards alter'd their Minds, and frequently used it. *Horstius*, *Hechstetter*, and others, are Instances of this, who after railing at it in Print, acknowledge, that they afterwards got into the Use of it, and found it an excellent Medicine. It requires Caution and Judgment indeed in the administering it, but those who know how to give it properly, find it an excellent Remedy in Dropsies, Cachexies, Jaundices, Asthmas, Catarrhs, and in the worst cutaneous Eruptions; besides

Mr Bolduc directs it to be tied up in a linen cloth & inclosed in a loaf of Bread hot from the Oven, & kept warm for twenty four hours, then powdered again, enclosed in a fresh Loaf, & this Process to be repeated 4 or 5 times — By this means, he says, it loses its drastic Quality, & becomes a Safe Purgative.

besides its Readiness in Operation, and its not griping as most other of the strong Purges do, it has the Advantage of being neither offensive to the Taste nor Smell, and of working in a very small Dose.

Its Dose is from two or three Grains to six, eight, or ten: *Clusius* carries it as far as twenty, but this is not adviseable. The *Indians* are less nice in the Quantity, they throw a Piece of it as big as a Nutmeg into a Glass of Water over Night, and drink off the Liquor the next Morning, let it have dissolved what it will of it; though a great Part of the Gum always remains at the Bottom in this Case, the Dose is a very violent one, and is such as would by no means do in this Country. Four Grains of it generally operate briskly by Stool without vomiting: Eight or ten Grains usually vomit briskly, and purge downwards afterwards; a Dose that will occasion vomiting at first, will pass quietly downwards when repeated afterwards, as is necessary in many Cases: If given in Form of Bolus, it usually vomits more certainly than if dissolved in some aqueous Fluid: It is observed scarce ever to vomit any Body if given with Calomel. It is liable indeed to the same Accidents that all the other strong Purges are, and they may be guarded against in this in the same manner as in the others. Some add, to prevent its operating by Vomit, a few Drops of Oil of Sulphur, or of Spirit of Vitriol: Others correct it with the Fume of Sulphur, the Juice of Quinces, or the Spices, as Mace, Cinnamon, and the like; or with their essential Oils; but all these Correctives are not sufficient to prevent its operating by Vomit if taken in large Doses, and therefore the moderating the Quantity answers the Purpose better than them all.

CHAPTER VI.

OPIUM.

OPIUM is an inspissated Juice, partly of the resinous, partly of the gummy Kind. It is brought to us in Cakes or Masses, usually of a roundish Figure, flatted and covered with Poppy Leaves. These are of uncertain Sizes, but usually they are about an Inch thick, and their Weight is from eight Ounces to a Pound.

Opium is very heavy, of a dense Texture, not perfectly dry, but more or less soft, and commonly easily receiving an Impression from the Finger; it is tough and hard to break; its Colour is a brownish yellow, so very dark and dusky, that at first Sight in the Mass it appears black; Its Smell is very unpleasant, of a dead faint Kind; and its Taste very bitter, and very acrid.

It is inflammable, yet it is in great Part soluble in Water. It is brought to us from *Natolia*, from *Ægypt*, and from the *East-Indies*; and is to be chosen moderately firm, not too soft, as our Druggists often render it, by keeping it in damp Vaults to encrease its Weight; its Smell and Taste must be very strong, and Care must be taken that there is no dirty, or stony Matter in it.

The *Europeans* for many Ages esteemed the *Thebaic* Opium greatly superior to that of *Asia Minor*, or the *East-Indies*, but at present there is no Distinction made; but Opium that is not too dry and friable, and that has a good Smell, and has no accidental Foulnesses mix'd among it, is all esteem'd of equal Value.

The Plant which affords Opium is one of the *Polyandria Monogynia* of *Linnaeus*, and one of the *Herbæ flore tetrapetalo anomalæ* of *Ray*; and is described by all the botanical Writers under the Name of the white Garden Poppy, the *Papaver hortense semine albo*, *Papaver sativum Dioscoridis*, and *Papaver album Plinii*. The Root is as thick as one's Finger, bitter to the Taste, and full of a milky Juice, as is also every other Part of the Plant. The Stalk grows to four or five Feet in Height; the Leaves are somewhat like those of the Lettice; the Flower is large and white, consisting of four great Petals, which fall off in a few Days; the Fruit which succeeds this is roundish or oval, of the Bigness of an Apple, covered with a Crown, and containing a multitude of kidney-shap'd Seeds, adhering to little Lamellæ.

The Fields of *Asia Minor* are in many Places sown with the white Poppy, as ours are with Corn. When the Heads grow toward Maturity, but are yet soft, green, and full of Juice, they make Incisions in them, and from every one of these there flow a few Drops of a milky Juice, which soon hardens into a solid Consistence: These Drops are gather'd with great Care, and are the finest Opium. *Tournefort* tells us, that after they have obtained all they can this Way, they bruise the Heads and express their Juice, and by this means get a much larger Quantity; but *Bellonius*, who had been through the same Places where *Tournefort* was, says not a Word about this Opium procured by Expression; nor does *Kæmpfer* mention any such Process in his treating of the manner of obtaining Opium in the *East*: Both these Authors make three Kinds of Opium, but no one of them procured in this coarse Way. *Kæmpfer's* Account is this: When the Heads are near ripening they wound them with an Instrument, which is a sort of Knife carrying five Edges, this, on being struck into the Head, makes at once five long Cuts in it, and from these Wounds the Opium flows; and is the next Day scrap'd off by a Person who goes round the Field with a smooth Knife without any Edge, and is put up in a Vessel which he carries, fastened to his Girdle for that Purpose: At the same Time that this Opium is collected, the opposite Side of the Poppy Head is wounded by the same Instrument used at first, and the Opium is collected from it the next Day in the same manner.

They distinguish however the Produce of the first Wounds from that of the succeeding ones, and that with great Reason, for the first Juice afforded by the Plant is greatly superior to what can be obtained afterwards; they call this first flowing of the Heads *Gobaar*; it has much more Virtue than the rest, and is sold at a much greater Price; its Colour is at first white, but afterwards it becomes yellowish, and when long kept of a dusky brown. The Opium produced from the second Wounds is darker colour'd, and approaches to Blackness; it has a weaker Smell and Taste than the former; after this they often wound the Heads again, and from this third Operation obtain more Opium, but it is black, and of very little Value.

After they have collected the Opium, the manner of their preparing it is this: They moisten it with a small Quantity of Water, or of Honey, and work it a long Time upon a flat, hard, and smooth Board, with a thick and strong Instrument of the same Wood, till it becomes of the Consistence of Pitch; finally, they work it up with their Hands, and form it into Cakes or Rolls for Sale. Multitudes of People are continually employed in this Preparation

It is supposed by some to be the Nepenthe of Homer, w^h he says Helen mixed in the Drink
of the Greeks when they were sad; Tho' Plutarch thinks it only a Metaphorical Expression
for Helen's cheerful Company.

℥ss of Opium distilled in a Retort w th a slow Heat gave	of Phlegm	℥i	℥ij	
	fatid sp ^{ts} .	℥iv	℥ij	
	Oil	℥ij		
	Volat Salt			gr iv
	Caput Mart.	℥vj		
lost in Operation.		℥ij	℥ij	gr liij

paration of Opium, and they have several Ways of doing it. On some Occasions they add a great deal more Honey than is barely necessary to reduce the Opium to a Consistence for working; they add these large Quantities of it with Intent to correct the disagreeable Taste of the Opium, and reduce it to a Consistence afterwards by Heat. They also sometimes make it up with a Mixture of Nutmeg, Mace, Cinnamon, and Cardamom Seeds. The former Preparation they call *Bæhrs*, and this latter *Pholonia*, whence the Term *Philonium Persicum* used by *Mesue*: Others omit the Spices, and work it up with a large Portion of Saffron and Ambergrease; and besides these general Methods, People who prepare it for their own private Use have a multitude of others, which they make use of at Pleasure; but none of these Preparations of this Drug ever get into our Druggists Shops, what we have being the mere crude Juice, or at the utmost such as has been work'd up with Water, or with a small Portion of Honey, no more than sufficient to bring it into Form.

The Antients distinguished two Kinds of this inspissated Juice of the Poppy; the one was the Juice obtained by wounding the Poppy Heads, as already described, this they call'd *Meconos Opos*, and afterwards by way of Eminence *Opicon*: The other was a Juice extracted from the whole Plant bruised and press'd, this they call'd *Meconium*: they tell us the *Meconium* was vastly weaker than the Opium: At present we know nothing of this second sort of Opium, it has been pretended that the *Turks* distinguish it, and that they send us none but the Opium made by Expression from the Heads, keeping the Juice procured by only wounding the Head for their own Use, but there is no sort of Truth in this. There is no Opium prepared otherwise than by wounding the Poppy Heads and collecting the Juice, nor is there any other Opium sold or used in *Constantinople*, than the same Kind which is sent over in Cakes to us.

The *Persians* who distinguish three Kinds, as we have observed, understand by their Distinctions only the Opium of the first, second, and third Cutting; they never make any by Expression. They have indeed a Drink made of the Heads and Leaves of the Poppy by Infusion, which they call *Cacamar*, but this is only made occasionally, and never reduced to the State of an Extract; they prepare this Drink either by boiling the Leaves, or infusing the Heads, after bruising them in Water; they also make up several cordial Electuaries, of which Opium is the Basis, and which they take to give them Spirits.

A Pound of Opium, distill'd in a Retort, yields somewhat more than six Ounces of a Liquor, partly acid and partly urinous; and somewhat more than an Ounce of a thick Oil. The Remainder in the Retort, though weighing near eight Ounces, will be reduced by calcining in an open Fire to about an Ounce of Ashes; and from these more than two Drams of a fix'd alkaline Salt may be procured by Lixivation. *Pitcairn* discovered an alkaline urinous Salt in Opium, but he was mistaken in supposing this the only Salt in this Drug: An acid Salt is also contained in it, and that in no small Portion, as appears not only by this Distillation, but by pouring a Solution of Opium in Water on some of the Liquors liable to be chang'd by Acids, for they are affected in the same manner by it as by other Acids, and that in no slight Degree. While Medicines were divided into the Classes of cold and hot by the medical Writers, Opium gave them great Trouble to know how to range it: Some from its affecting the Head and bringing on Sleep, troubling the Respiration,

spiration, and even bringing on Death in a too large Dose, declared it not only cold, but cold in the fourth Degree; and others observing its acrid and burning Taste declared it hot; nor were they more agreed about its Virtues and Use, than about the Class it was to be placed in; some call'd it a Poison, and ordered it to be wholly rejected, and others thought it the greatest of all Medicines. *Dioscorides* acknowledges, that in his Time many People were afraid to use it, even externally.

Galen speaks of it as a desperate Medicine, always attended with ill Effects, yet sometimes necessary in Cases of the utmost Extremity; and many of the People who came long after him continued in the same Opinion. *Dioscorides* himself however plainly knew better than either his Contemporaries, or these his Successors; he talks of giving Pills of it of a Grain or two in Weight, which he says in a miraculous manner took off Pain, and occasioned Sleep, and that without any ill Consequences; though he acknowledges, that imprudently given in large Doses it would do the utmost Mischief.

Among the Moderns *Platerus* was one of the first who ventured to bring it into Use, after it had long been rejected as a Poison. *Sylvius de la Boe* follow'd his Steps, and was so charm'd with the Virtues of this Drug, that he often declar'd he would not practise Physic without the Use of it. At present it is in great Esteem, and there is scarce any simple Medicine that might not more conveniently be spared than it. Apply'd externally it is emollient, relaxing, and discutient, and greatly promotes Suppuration; if long kept upon the Skin it takes off the Hair, and it always occasions an Itching in it; sometimes it exulcerates it and raises little Blisters, if apply'd to a tender Part. Laid on the *Perinæum* it promotes venereal Inclinations, and sometimes on external Application it allays Pain, and even occasions Sleep, but these Effects are very uncertain. It must by no means be apply'd to the Head at the *Sutures* of the Skull, it has been known to leave the most terrible Effects in this Application, and even to bring on Death itself.

Opium taken internally is to be consider'd as taken in a proper Dose, or in an immoderate one; a moderate Dose of Opium is generally under a Grain, though according to the Circumstances two Grains, or even three, may be within the Limits of this Denomination. Custom will make People bear a Dram or more as a moderate Dose, but in that Case Nature is vitiated, and nothing is to be judged in regard to others from it. Opium exerts its Operation very soon after the taking; if given dissolved it operates in half an Hour; if in a solid Form, as in Pills or the like, it is sometimes an Hour and a half first. Its first Effect in this Case is the making the Patient chearful, as if he had drank moderately of Wine; it removes Melancholy, and renders the Person bold and above the Fear of Danger; the *Turks* for this Reason always take it when they are going to Battle in a larger Dose than ordinary. It quiets the Spirits, after this, eases Pain and disposes to Sleep, and stops Hæmorrhages in many Cases; it promotes Sweating, and is a Provocative to Venery, and in general it takes greater Effect on Women and Children, than on Men. The great Intent with which we give Opium is to procure Sleep, this is of the number of the Effects it usually produces, but it does not always do it. Many People, in whatever Condition, sleep less after taking Opium than they would have done; the Sleep it occasions in others is pleasant and refreshing; it sometimes stops vomiting,

but

The Effects of Opium on the Blood, have been much controverted by Physicians, Dr Alston asserting y^t it coagulates & thickens it, Med. Essays. Vol. 5. p. 160. whereas Geoffroy says y^t it liquefies it so much, y^t the Blood of the Turks killed in Battle is found 3 or 4 days afterwards, as fluid as if they were but just killed.

Opium is often of service in Violent Tremors. Vid Alston. Medical Essay. p. 160 Vol. 5.

An uncommon Effect of Opium is a Stoppage of Urine, as I once observed to happen after taking of it.

Cassan, inquit Stalpert Van der Wied, quotquot curae succ. Infantes traditos custodiunt ne illis
Arrogantia propinqua, contingit enim sceler quavis non occidant, Infantibus Tamen Cerebrum
Nervosque debilitant, et sumumque Tremorem. Paralyin & Fatuitatem excitant.

The ill Effects of Opium when taken in too Large a Quantity are best remedied by Bleeding, Blistering & Acids, particularly if Use of Sal Abzynth. neutralized wth the Juice of Lemons is serviceable here, Mead on Poisons.

Tho' Dr. Astruc condemns Bleeding Medical Essays Vol. v. p. 178. but commends Use of Vomits, Sinapisms & Disphorotics mixed wth Acids.

but it sometimes also occasions it; it renders the Concoction of the Food in the Stomach slower, and much abates the natural Appetite; it may besides these be occasionally attended, even when given in moderate Doses, with many other Symptoms, and some of them very hard ones, but these may generally be accounted for, from the peculiar Circumstances of the Patient.

After the Effect of a Dose of Opium is over, the Pain it was given to abate returns, and that generally in a more violent manner than before, unless the Patient has sweat freely in his Sleep, which sometimes happens, but not always; the Spirits which had been elevated by it become lower than before, and the Pulse languid; there often is also an Itching of the Skin, and sometimes several Stools.

An immoderate Dose of Opium brings on a sort of Drunkenness, much like that occasioned by an immoderate Quantity of strong Liquors: Chearfulness, and loud Laughter at first, then a Relaxation of the Limbs, a loss of Memory, and Light-headedness; then Vertigoes, Dimness of the Eyes, with a Laxity of the Cornea, and a Dilatation of the Pupils, a Slowness of the Pulse, Redness of the Face, Relaxation of the under Jaw, swelling of the Lips, difficulty of Breathing, painful Erection of the *Penis*, Convulsions, cold Sweats, and finally Death. People who escape Death are usually relieved either by a great number of Stools or by profuse Sweats, smelling strongly of Opium.

People who have accustomed themselves to an immoderate Use of Opium are subject to Relaxations and Weaknesses of all the Parts of the Body; they are apt to be faint, idle, and thoughtless, and are generally in a stupid and uncomfortable State, except just after they have taken a fresh Dose; they lose their Appetite, and in fine grow old before their Time. It is not easy however to break through a Custom of this Kind, the People who have attempted it have found themselves miserably low spirited, and on flying to Wine, or stronger Liquors, for Relief, have found their Effect by no means comparable to that of Opium; so that they have generally been reduced to a Necessity of having Recourse to it again.

The Antients, who esteem'd Opium cold, in such a Degree as to approach to the Nature of a Poison, were fond of the Notion of correcting it with warm Medicines, and such as prevented the Coagulation of the Blood. And among the Moderns, many have thought of what they call Correctives for it, which have been calculated to prevent the particular Mischiefs they apprehended from it.

Castor and Saffron have been recommended by some to correct its narcotic Quality; others have recommended Vinegar, Lemon Juice, Spirit of Vitriol, Oil of Sulphur, and the other Acids; and others the alkaline Salts, both of the fix'd and the volatile Kind: Others have recommended Wine, and other fermented Liquors, or the Spirits distill'd from them: Some have had Recourse to the Effect of Fermentation on the Opium itself, and others have attempted it by roasting. As we at present however prescribe Opium principally as an Anodyne and Soporific, it appears to be a very absurd Attempt to rob it of those Qualities; there is indeed nothing to be fear'd from Opium given in a proper Dose, and no other Preparation is necessary or proper, beside the separating it from any accidental Foulnesses it may have among it, which is done by dissolving it in Water, and after straining it inspissating that
over

over the Fire to a proper Consistence; this is what is call'd the *Extractum Thebaicum*, and is the only rational Preparation of Opium when meant to be given without Addition.

As Opium however consists of two different Substances, a resinous and a gummous one, though these will be taken up together in a coarse Way in Water so as to pass the Strainer as in the former Operation; yet when a clear Tincture or Laudanum is required, Care is to be taken of the Nature of the Menstruum: Water in this Case takes up all the gummous Parts, but on Subsidence it leaves the resinous behind; and Spirit of Wine, though it dissolves the resinous Part, leaves the gummous. Wine or Proof Spirit come nearer dissolving the whole than either absolutely spirituous, or absolutely aqueous Menstruums. A Tincture of Opium, made in rectify'd Spirit, violently affects the Head, and sometimes brings on a Delirium; whereas that in Water acts more placidly, and gives a quiet and pleasant Sleep.

Vinegar almost entirely dissolves Opium, but *Le Mort* observed a very odd Effect from this Tincture, which was, that it often brought on Suppressions of Urine. A Tincture made from Opium with alkaline Salts, is found to have very little Effect in procuring Sleep: Made with the volatile Alkalis, as Spirit of Sal Armoniac, and the like, though it does not procure Sleep, it is very sudorific, and may be a very useful Medicine in particular Cases.

Upon the whole however Water seems to be the true and proper Solvent of Opium for internal Use, the Laudanum prepared with it being liable to none of the Objections raised against the other Kinds. *Le Mort* and *Wedelius* are both of this Opinion: And *Jones*, a Writer of our own Nation, calls Water Laudanum the greatest of all Panaceas. It is certain that the Resin of the Opium is lost in this Preparation, but perhaps 'tis best to be without it. We see by the Laudanums made with Spirits which can take up this Resin, that it is the Part of the Opium most of all capable of producing bad Effects. Beside the Use of Opium alone in its solid Form, and in the several Kinds of Laudanum, it is almost continually given in other Forms, and combined with other Medicines; as it is an Ingredient in a great number of the principal Compositions of the Shops.

CHAPTER V.

CATECHU,

Catechu, commonly call'd Japan Earth.

CA T E C H U, commonly but very improperly call'd *Terra Japonica* in the Shops, is a concreted vegetable Juice, partly of the gummy, partly of the resinous Kind. The Name of *Japan Earth* was doubly improper for it as it is not an Earth, nor indeed is a Produce of that Country, none of it being met with in *Japan* but what has been brought thither from elsewhere.

The common *Terra Japonica* of the Shops is brought to us in large flat Cakes of an irregular Figure, and from an Inch to two or more in Thickness; it is considerably hard; its Colour is a dusky purplish brown, often approaching to Blackness on the outside but paler within; these Masses are of a very irregular Structure, sometimes very dense and compact, sometimes more lax.

4 Ounces of Opium wth Spirit of Wine yielded ℥ij Jiv of Resinous Ex.

The Residuum with Water yielded only Jiv of Gummy Extract

4 Ounces with Water first yielded ℥ij ℥v of Gummy Extract

The Residuum with Spirit of Wine ℥ij Ji of Resinous Extract

Baume in his Elements of Pharmacy recommends an Extract prep^d by long digestion 2 Months at least, by w^{ch} means it is freed from its oily & resinous parts & only the Gummies remain - p. 259.

Opium paululat^r aqua emollitur & Colur. transit integrum foliis fœcibus relictis,
si autem multa aqua diluatur, Pars Resinosa & Gummosa Separabitur.
Pharmacop. Lond. p. 25. 2^{to} Edit.

when pure it is almost totally dissolved both by Water & Spirit

Jiv yields with Water ℥ij ℥vi of Extract

If the Residuum Spirit of Wine took up no more than 12 grains

Jiv yields with rectified Spirit ℥ij of a Resinous

The Residuum with Water yielded ℥v ℥ij gr viii of a Gummy
Extract —

They shew a smooth but not glossy Surface on breaking, and are not at all transparent; and they not unfrequently have Dirt and Sand among them. There is however beside this another Kind of *Terra Japonica* sometimes met with in the Shops, but rarely; it is of a much paler Colour than the other, and is perfectly clean and fine: We meet with it in smaller Masses, and those of a laminated Structure, or composed of great numbers of fine thin Flakes, lying regularly over one another; this is vastly the more valuable Kind, but it is very rare; the other is generally so foul that it ought to be dissolved in Water, and inspissated to the Form of a solid Extract before it is used.

Terra Japonica has no Smell, but its Taste is very singular, it is austere and astringent on first taking into the Mouth, but it afterwards becomes very sweet and pleasant. The finer Kind of *Terra Japonica* very readily melts in the Mouth, and is extremely pleasant to the Taste; the other melts much more slowly and is gritty between the Teeth, and frequently has a burnt Taste. We have the *Terra Japonica* from *Malabar*, *Surat*, *Pegu*, and some other Parts of the *East-Indies*. What gave rise to the vulgar Error of supposing this Drug an Earth, was the Account the People who brought it over gave of it; they knew nothing of its Origin, and from its dirty look and dry friable Texture, and the Shape and Figure of the Masses they received it in, they supposed it to be an Earth: At present however there is no Body but knows that it is a vegetable Product, which is easily prov'd by grinding it in Water, in which Case it is dissolved, and passes the filter which no Earth will do; it is also inflammable, and burns almost entirely away, leaving but a very small Quantity of Ashes behind it.

The *Indians* call this Drug *Khaath*, *Cate*, *Catechu*, *Caetchu*, and *Castjoe*; they prepare it from the Parts of several different Trees of the same astringent Virtue, and therefore it is, that the several Parcels of it among them are so very different from one another. *Garcias* describes one of the Trees from which they procure it, which he tells us is as tall as an Ash, and has Leaves like the Turmeric, which are green all the Year: He adds, that it is prickly, and that they do not prepare the Catechu from this alone, but with the Admixture of many other Ingredients. *Bontius* also describes this Tree, and adds to the Circumstances of its being prickly, and ever green, that its Fruit is round, of the Bigness of a Bean, of a purple Colour, and that it contains three or four Nuts, so hard that they are not to be broke without a Hammer: He tells us, that the Catechu is made by boiling, from the Leaves and Bark of this Tree; and both he and *Garcias* are firm in the Opinion, that this is the *Lycium* of the Antients. *Herbert de Jager* tells us, that the *Lycium Indicum* of *Garcias* or Catechu, is not the Produce of any one Tree, but that the *Indians* prepare it from all the Species of Acacia, which have a red Bark of an astringent Taste, and from many other Trees and Plants, the Juice of which is of an astringent Kind, and can be procured in the same Way by boiling in Water. All the Juices thus prepared, he tells us, are call'd *Kaath* or Catechu there, but that the most esteem'd Kind is prepar'd from a Species of Acacia, call'd by the Natives *Kheir*, and *Khadira*; this is a prickly Acacia, very much branch'd and cover'd on the Trunk, and large Branches with a whitish grey Bark, and on the young Shoots with a red one. The Leaves are of the pinnated Kind, and the Pinnæ very small; the Author did not see either the Flowers or the Fruit, but he found

that the People of *Pegu* made all their Catechu from it, and that this was dispersed in great Quantities all over the *East*.

The *Indians* of different Places prepare in this manner their *Terra Japonica*, as we call it, from the Decoctions and Juices of very different Trees, and some of all the several Kinds probably comes over at Times to us: What we generally meet with however, and what may be call'd the genuine *Terra Japonica* or Catechu of our Shops, is the Produce of a Tree call'd the *Areca*, different from all the former, and more in Esteem in many Parts of the *Indies* than any of them for this Purpose.

The *Areca* is of the Palm Kind, and is described by botanical Writers under the Name of *Palma cujus fructus sessilis faufel dicitur, Areca sive faufel, and Areca Palmæ foliis*. *Herbert de Jager* beforementioned, and *Joannes Otbo Helbigius*, who had both been on the Spot where the *Terra Japonica* was made, and who have published an Account of it in the *German Ephemerides*, agree; that this is one of the most famous Trees in the Country for yielding it; and indeed of late we are informed, that very little is sent into *Europe* but what is made of it.

It is a tall and lofty Tree; its Root is black on the Surface, and has a great number of reddish or yellowish Fibres: Its Trunk rarely exceeds five or six Inches at the Base, and is gradually smaller to the Top; it is naked, and is cover'd with so smooth a Rind, that the Natives are obliged to tie Ropes round it, at certain Distances, to assist them in climbing it: The Leaves are collected in Clusters at the Top of the Tree, and form a Head larger than the Trunk, from which the outermost breaking away hang down horizontally; they are two or three Feet long, and are composed of a multitude of other long and narrow Leaves placed in Pairs. From the *Axe* of the Leaves there issue out a sort of Cases one from each Leaf, which include the Pedicles that sustain the Fruit and Flowers; these are near two Feet in Length, hollow on one Side and convex on the other; their Surface is smooth, and there runs along the Center of the hollow'd Part a strait Line, at which, when ripe, they burst longitudinally; they are of a greenish white at first on the outside, but afterwards of a yellowish Colour, and they are always whitish within. Of the Pedicles inclosed in these Capsules, some are thick and strong, and have the Rudiments of the Fruits on their lower Parts; others are thin and slender, and have two Rows of Male Flowers on their opposite Sides. The Fruit while young and tender is whitish, soft, of a glossy Surface, and is fastened to the Stalk by a white Pedicle; they are not round at this Time but of an angular Figure, and are in great Part cover'd with the Leaves of the Cup, which are of an oblong Form, and laid over one another: In the midst of the Pulp of this Fruit there is a Quantity of a limpid Fluid, of a strongly astringent Taste: As the Pulp of the Fruit by Degrees encreases, afterwards this Humor decreases, till at length there is none of it left: There is then a white medullary Substance form'd as the Pulp grows hard, and the Rind of the Fruit then becomes yellowish, or of a yellowish brown: In fine, when the Fruit is perfectly ripened, it is of a roundish but somewhat oblong Shape, and much resembles a date Fruit; it swells out in the Middle, and is smaller at the Base and at the Top; it consists of a smooth membranaceous Rind, tolerably thick, and of a brownish yellow Colour; and under this is contained a pulpy Matter, of a sort of Orange Colour

Colour while fresh, but in drying it becomes lax, fibrous or lanuginous, and of a yellowish Colour; and within this is the Seed or Kernel, which is what we sometimes meet with in the Cabinets of Collectors, under the Name of the Fruit of the Areca, and which is there generally supposed to be the whole Fruit.

This Kernel, when the fibrous Substance that was once the Pulp of the Fruit is thoroughly dry, easily separates from it and falls out; it is about the Size of a Nutmeg, and is usually of a turbinated Form, flattened on one Part and rising into an orbicular, or more or less conic Form on the other; it is somewhat rough or striated on the Surface, of a yellowish brown Colour, often with some Mixture of Reddishness in it, making it approach to a Cinnamon Colour; it is solid within, and is there variegated or marbled in the manner of the Nutmeg; its Taste is aromatic and astringent.

The *Indians* are extremely fond of the Fruit of this Tree: When they do not make Catechu of it, they chew it with the Catechu made from other Trees, and mix'd with a little Lime, and with the Leaves of Betle. When they make their *Kaath* or Catechu from it, as is now done in great Quantity in many Places, they do it in this manner. They collect the Areca Nuts while they are unripe and cut them into two or three Pieces each, and then boil them for about four Hours in a sufficient Quantity of Water, to which they add a little Lime made of burnt Shells; the Pieces of the Fruit in this Time will have acquired a purplish Colour; the Decoction which is by that Time very strong, is strained off hot and set by to settle, when it is cold they pour it off gently from the thick Matter which has subsided to the Bottom of the Vessel, this they carefully take out and expose to the Sun to dry; they mix nothing else with it, but when dry'd they call it, as they do the other Kinds, *Kaath* or Catechu, and use it as they do the others. Beside this simple Kind of *Terra Japonica* prepared from the Fruit of the Areca, they sometimes add to the Decoction, the Bark of the Acacia before described, which they have before kept macerated in Water for several Days; and when they have made an Extract from both the Decoctions, they form it into Cakes or Rolls at Pleasure.

The richer People add also to the Decoction many other Ingredients, such as Cardamom Seeds, Lignum Aloes, Musk, and Ambergrise, and when this is done they form the Extract into little Globules, or into larger, flat, or round Cakes; sometimes into the Figures of Flies, and other Insects; and sometimes into that of Flowers, and the like; and use it to sweeten their Breath, taking a little Piece at a Time into their Mouths for that Purpose. These are generally so highly scented as to be offensive to us, but the *Eastern Nations* are fond of Perfumes: The Catechu of the Areca, that is in the rude Mass, not wrought up into these Forms, rarely has any other Ingredient but the Nut itself.

Garcias and *Bontius* both tell us, that the unripe Areca Nut has an intoxicating Quality like that of Wine. The *Indians* chew it frequently in this State, partly for the Pleasure of this Intoxication, partly to sweeten their Breath, fasten their Teeth, and strengthen the Stomach. They know it as an Astringent also very well, and take it to stop Fluxes of all Kinds; as they do also the simple Catechu prepared by Decoction from it.

The simple Extract of the Areca, or the *Terra Japonica* of our Shops, is a very valuable Astringent. It strengthens the Stomach, assists Digestion, and stops Fluxes, Diarrhœas, and even Dysenteries, as also Hæmorrhages of all Kinds, and particularly Profluvia of the Menfes. It is also found of great Service in the Diabetes, and in inveterate Coughs arising from a sharp Humour affecting the Parts. Its Dose is from five or six Grains to a Scruple, but more may be taken without Danger. It may be given in almost any Form, but none is so good as the taking small Pieces of it at a time into the Mouth, and letting them gradually go down, supplying others in their Stead as they are swallowed.

Many Authors are very ready to affirm, that the Catechu of the Moderns is the same with the Lycium of the Ancients, but it seems a Point not easily ascertained: *Dioscorides*, *Galen*, and *Pliny* all mention two Kinds of the Lycium, the one brought from *Cappadocia*, the other from *India*. The first they tell us, was a Juice extracted from a prickly Tree with thick Leaves like those of the Box, and with a Fruit small, black, round, light, like a Pepper Corn in Appearance, and of a bitter Taste. They say this Tree grew in *Lycia* and other Places, and they call it *Lycium* and *Pyxantha*. The Lycium they say was prepared from a Decoction of the Branches and Roots of this Tree first bruised; the strong Decoction of these they inspissated over the Fire, and when dry, they tell us it was formed into Masses which were black on the outside, and reddish within; but that this new Surface soon became black too; the Smell was not unpleasant, and the Taste bitter and astringent. This was the *Cappadocian* Lycium of the *Greeks*, which they tell us they also made sometimes from the Seeds of the same Tree.

The *Indian* Lycium, on the other hand, was of a yellow Colour, and was greatly superior in its Virtue to the *Cappadocian*. *Dioscorides* relates it as the Opinion of those times, that this was made from a Shrub called *Lanchitis*, that this was of the prickly kind, and grew to six or eight Feet high. The Bark of this, he says, was red within, and the Leaves of the Shrub like those of the Olive Tree. The Lycium of both Kinds was astringent and possessed much the same Virtues with our Catechu, but the Descriptions we have here of the Trees, by no means agree with any of those of which our Catechu or *Terra Japonica* is made.

CHAPTER IV.

SUCCUS GLYCYRRHIZÆ,

Liquorice Juice.

LIQUORICE Juice is of all the Drugs of this Class the most common, and in the most frequent Use. It is the inspissated Juice of the common Liquorice Root; and is brought to us in Rolls or Cakes, covered usually with Bay Leaves, and weighing a Quarter of a Pound, half a Pound, or more each. It is of an extremely compact and firm Texture, very heavy, hard to break, and of a shining black Colour. It melts freely in the Mouth, and is of a very sweet Taste with a little Acridness mixed with it. It is brought to us from *Spain* and *Holland*, from the first of which places it obtained the
Name

Name of *Spanish* Juice. It is to be chosen firm but not tough, hard, and when broken, of a fine shining Surface; such as perfectly melts in the Mouth, and does not taste of burning, nor leaves any harsh or gritty Particles between the Teeth.

The common Liquorice or *Glycyrrhiza*, the Plant from whose Root this Juice is extracted, is one of the *Diadelphia Decandria* of *Linnaeus*, and one of the *papilionaceæ* of *Ray*. It is described by all the botanical Writers under the Name of *Glycyrrhiza radice repente*, and *Glycyrrhiza vulgaris Germanica*. It has already been described in treating of its Root. It grows very abundantly in the Island of *Crete*, in *Italy*, *France* and *Germany*, but most abundantly in *Spain*. The manner of preparing the Liquorice there is this. They take up the Roots in the Month of *July*, they clean them perfectly as soon as taken out of the Earth, and then hang them up in the Air till nearly dry; after this they cut them into thin Slices, and boil them in Water till the Decoction is extremely strong; they then press it hard out to obtain all the Juice they can from the Root. They set this Decoction by to settle a little, and when it has deposited its coarsest Parts, they pour it off into Vessels in which they evaporate it over a Fire, strong at first, but milder afterwards, till it becomes of the Consistence of a thick Extract; they then suffer the Fire to go out, and when the Extract is so cool that they can handle it, they take out large Parcels of it at a time; and working them well in the Hands, they roll them out into long cylindric Masses, which they cut out into such Lengths as they please, and rolling them over a Parcel of half dried Bay Leaves, they pick up enough of them for a Covering, and are in that Condition laid in the Sun till perfectly dried: There is great Nicety required at the End of the Evaporation to get the Extract to a proper Consistence without letting it burn. It is this the *Spaniards* are famous for: A great deal of Liquorice Juice is made in other Places, but it is in great Part either under boiled, and consequently soft, or it is burnt.

Liquorice Juice has the same Virtues with the Root it is procured from. It is a very famous Remedy among the common People for Coughs, and all Disorders of the Breast and Lungs. It is commonly taken alone, holding a small Piece of it in the Mouth till it gradually melts there; but the more agreeable Way of taking it is in Form of Lozenges, of which there are many Kinds which it is the Basis of; in these it is mixed with other pectoral Ingredients, and has the Advantage of melting more easily in the Mouth than in its own Form. It is also an Ingredient in the *Theriaca* and some other of the Compositions of the Shops.

CONCRETE JUICES,

Less frequently used in MEDICINE.

CHAPTER I.

ACACIÆ SUCCUS,

Acacia.

THE *Succus Acaciæ* of the Shops is an inspissated vegetable Juice of the gummous Kind. It is brought to us in Cakes or Masses of a Quarter of a Pound or twice as much in Weight, and is moderately heavy, and of a dense Texture, not easily broken. It is of a dusky brownish black Colour on the outside, and of a deep yellowish brown, or dusky Kind of Orange Colour where fresh broken. It melts in the Mouth after some time holding there. It has very little Smell, and is of an austere and astringent, but not very disagreeable Taste. We have it from *Ægypt*, where the Cakes of it are usually wrapped up in thin Bladders in order to keep them entire, and to preserve them from damaging by Accidents. It is to be chosen fresh, clean, and of a yellowish Cast within, and such as will readily dissolve in Water, what is very dry and brittle, and of a dead black throughout, is to be rejected.

The Tree which affords the *Succus Acaciæ* is the same which yields the Gum Arabic, and which has already been described in that Chapter. This Juice is prepared in the following manner: They collect the Pods of this Tree before they are ripe, and after spreading them abroad in a shady Place for two or three Days to give them time to evaporate some of their watery Parts, they cut them into three or four Pieces each, and throw them into a small Quantity of Water, in which they are left for four and twenty Hours; they then bruise the softened Pods with large wooden Pestles, till they have thoroughly blended them with the Water, and reduced the whole to a thick Matter. More Water is then added by Degrees, till the whole becomes thin and fluid. In this State it is kept over the Fire some Hours without letting the Heat be so great as to make it boil; they then press out the Liquor, and after the grosser Particles which passed the Strainer have subsided from it, they boil the rest to the Consistence of a thick Extract, diminishing the Fire toward the End of the Operation, as in the making of Liquorice Juice, to prevent Burning. When the whole is of such a Consistence that they find by Trial made with small Drops taken out and exposed to the Air, that it will be firm when cold, they take it from the Fire, and as it grows cool, they form it into Cakes such as we receive it in.

Acacia has been long known in Medicine, and has always been esteemed a very valuable Astringent. *Dioscorides*, and the *Greeks* in general, say much in its Praise. It is certainly an Astringent of some Power. It strengthens the Stomach, stops Vomitings and Diarrhœas, and is good against Hæmorrhages of all Kinds. It may be given either in Forms of a Bolus or in Draughts, for it readily melts with aqueous Liquors. Its Dose is from a Scruple to two Scruples; but it is rarely prescribed at present, and is principally kept in the

Shops as an Ingredient in some of the old Compositions. Though we hold it in so little Esteem, however in *Ægypt* where it is prepared, *Alpinus* tells us it is in great Credit; they give it for Hæmorrhages of all Kinds, a Dram for a Dose, and in the Profluvia of the Menses or the *Fluor Albus*; they inject a Solution of it warm up into the Part. The *Ægyptians* are frequently subject to Inflammations and Defluxions of sharp Humours on the Eyes, and they use a Solution of this Juice as a Collyrium on these Occasions with great Success. They also use it as a Gargarism in the first Stage of a Quinsey; and a Decoction of the Bark and Flowers of the Tree with some of this Juice dissolved in it is famous for Prolapsus's of the Anus. Beside its medicinal Uses, it is also consumed at *Cairo* in great Abundance in the dressing of Leather, in which it is said to excel all the other things in Use in any Part of the World.

The little Use made of the *Succus Acaciæ* with us having long since rendered it scarce in our Shops, no body thinking it worth their while to import it; we have fallen into a Way of preparing a Succedaneum for it, which by way of Distinction from the true *Ægyptian* Acacia, we call *Acacia nostra*, and *Acacia Germanica*.

The *German* Acacia is an inspissated Juice of a firm Texture, and considerably heavy. Its Colour is black throughout, and when fresh broken, its Surface is bright and glossy. It is generally met with in Form of flat Cakes of the Size of the Shape of those of the *Ægyptian* Acacia, and like them wrapped up in thin Bladders. It has no Smell: Its Taste is austere and astringent, but it has a Tartness or Acidity which distinguishes it from the *Ægyptian* Kind as well as its Colour, and is much less pleasant. We have it from *Germany*. It should be chosen fresh and hard to break, of a glossy black like that of Liquorice Juice when fresh broken, and such as melts freely in the Mouth, and has not a burnt Taste.

The Shrub which affords us the true *German* Acacia, is no other than the common Sloe Tree, the *Prunus sylvestris* commonly known among us under the Name of the black Thorn. It is one of the *Polyandria Monogynia* of *Linnaeus*, and one of the *Arbores et frutices pruniferae* of *Ray*. It is too common in our Hedges to need a Description. The Acacia is prepared from it in this manner. The Fruit is gathered while green, and large Quantities of it bruised together in a Mortar, when thoroughly beaten a little Water is added, and mixed thoroughly by grinding about with the Pestle; the whole is then set over the Fire to boil for a few Minutes; and after this is strained off, pressing it as hard as possible; when the coarser Parts have subsided, the rest is poured off and inspissated over the Fire, to the Consistence of a thick Extract, and is then taken off from the Fire, and as it cools work up with the Hands into the Cakes we meet with it in. It possesses the Virtues of the true Acacia, but in a more remiss Degree, and as the other might so easily be had, It is almost inexcusable to bring this into Use in its Stead.

CHAPTER II.

SUCCUS HYPOCISTIDIS,
Hypocist.

HYPOCISTIS is an inspissated Juice, much resembling the true *Ægyptian* Acacia. We meet with it in moderately large, flat Masses. It is considerably hard and heavy, of a fine shining black Colour like that of Liquorice Juice when fresh broken, and of a duskier black on the Surface. It has scarce any Smell: Its Taste is austere and astringent. It melts but slowly and difficultly in the Mouth, and is often so carelessly prepared, as to leave some little Grittiness between the Teeth. It is brought to us from the *Levant*, and from some Parts of *Europe*. The *French* make a good deal of it from the Plants of their own Growth, and sometimes supply other Places with it.

The Plant from which it is procured is one of the *Dodecandria Monogynia* of *Linnaeus*, and one of the *tetrapetalæ vasculiferæ* of *Ray*. It grows up from the Roots of several Species of the Cistus in the manner of the Orobanche or Broom Rape with us, and is described by all the botanical Writers under the Name of *Hypocistis*. It grows to four or five Inches in Height. Its Stem is thick and fleshy, not easily broken, and sometimes of a whitish, sometimes of a purplish, and sometimes of a yellowish Colour. What is singular also in it is, that it is much thicker toward the Top than at the Bottom; near the Base it is rarely so much as half an Inch in Diameter; but higher up it is often near two Inches. It is covered all the Way up with a Sort of scaly Leaves of half an Inch in Length, more than a Quarter of an Inch in Breadth, and obtusely pointed. The Stalk is of an extremely austere and astringent Taste, with some Degree of Bitterness; toward the Top it carries a great Number of Flowers interspersed with Leaves of the same squamous Kind with those upon the Stalks. These Flowers are somewhat like those of the Pomegranet, and they are succeeded by roundish Fruits near half an Inch thick, and divided into six or eight Parts within, in which is contained a tough, glutinous Liquor insipid to the Taste, and a Quantity of Seeds of an extreme Minuteness. The striated Globule of the Pistil always adheres to the Extremity of this Fruit. The Plant is easily separated from the Roots of the Cistus to which it grows, and leaves in the Place whence it was separated, a little smooth Cavity in the Surface without any Vestige of Fibres.

This Plant is very common in the Island of *Crete*, and a considerable Quantity of the inspissated Juice is prepared there in this manner. They gather the Fruits while unripe and express the Juice which they evaporate over a very gentle Fire to the Consistence of an Extract, and then form into Cakes, and expose to the Sun to dry. *Hypocistis* was well known to the Ancients, *Dioscorides* tells us that beside the Juice prepared honestly from the Fruit, some People in his Time used to dry the whole Plant, and afterwards make a strong Decoction of it, which they evaporated to a Consistence, and sold as the true *Hypocist*.

Hypocist is an Astringent, and that of considerable Power: It is good against Diarrhœas and Hæmorrhages of all Kinds, and may be used in repellent Gar-garisms in the manner of the Acacia, but it is very rarely met with genuine in our Shops: The *German* Acacia usually is sold under its Name.

C H A P T E R III.

ELATERIUM.

ELATERIUM is an inspissated Juice, extremely different from the others hitherto mentioned in its Form and Texture. We meet with it in Fragments of flat and thin Cakes, often not thicker than a Shilling, and rarely exceeding at the utmost a third of an Inch. It is very light and of a friable Texture; its Colour is a pale dead whitish; it is of no remarkable Smell, but it is very acrid and pungent to the Taste, and very readily mixes with any aqueous Fluid.

The Plant it is procured from is one of the *Monœcia Syngenesia* of *Linneus*, and one of the *Herbæ Pomiferæ* of Mr. *Ray*. It is of the Cucumber Kind, and is described by the botanical Writers under the Name of *Cucumis Agrestis*, and *Cucumis Asininus*. Its Root is very long and thick, of a whitish Colour, and bitter nauseous Taste: Its Stalks, which lye upon the Ground in the manner of those of the common Cucumber, are hairy and thick: The Leaves are of a roundish Figure, but pointed; and the Flowers like those of the Cucumber, half an Inch wide, and of a yellow Colour vein'd with green. The Fruit is like the common Cucumber, but it rarely exceeds two Inches in Length, of a cylindric Figure, and beset with prickly Protuberances. It is divided within into three Cells, in which are contained a number of Seeds, which swim in a large Quantity of an acrid and almost caustic Liquor. When the Fruit is ripe it bursts with Violence on the slightest Touch, and this Liquor, with the Seeds among it, flies up as high as a Person's Face, often getting into Peoples Eyes, and doing great Mischief. The Seeds are broad, flattened, very smooth, and of a blackish Colour.

It grows in many Parts of *Europe* wild by the Way Side. To make the Elaterium they gather the Fruit, when almost ripe, and cut it into Slices, saving all the Liquor that comes from the Body of the Fruit in cutting, and also that which afterwards naturally runs from the Pieces, which is no small Quantity; this is thick and whitish; they throw away the Cuttings of the Fruit without pressing them, and set by the Juice to settle; a thin watery Liquor soon separates to the Top, and this being pour'd off a white Residuum is left at the Bottom, which, when farther drain'd of its watery Part, is exposed to the Sun in flat Vessels, where it concretes into the Cakes, the Fragments of which we usually meet with.

The Antients were very well acquainted with Elaterium: The old *Greek* Writers indeed sometimes used the Term Elaterion in a more general Sense to express all the cathartic Medicines, but they more usually restrained it to this single one. This however they distinguished three different Kinds of: The first was the white Elaterium here described, this they made, as we do at this Time, from the Juice which naturally runs from the Fruit without pressing.

The second Kind of Elaterium was of a greenish Colour, this they prepared from the Juice of the Fruit press'd out with considerable Force, which in that Case carried a considerable Share of the Pulp of the Fruit with it, which subsiding afterwards with the Fæculæ became a Part of the Medicine; this green Elaterium consequently was less violent in its Operation than the white. The third Kind was prepar'd from the Seeds bruised and boiled in Water, and the Decoction inspissated.

The white Elaterium, which is the only Kind in Use now, is a very violent and rough Purge, it generally operates both by Vomit and Stool, but it is so sharp as often to erode the Vessels and bring away Blood. The Antients talk of giving Elaterium in very large Doses, twenty or thirty Grains of it are often mentioned by them to have been given: With us the Matter is much otherwise, half a Grain or a Grain is now a common Dose, or at the utmost two Grains. It has been greatly recommended in Dropsies, particularly in *Anasarca*; and there are Instances of the *Fluor Albus* being cured by it, when all other Medicines had been try'd in vain, but it is so rough a Medicine, that very few of our Physicians care to have any thing to do with it.

Artificial vegetable Productions

Used in M E D I C I N E.

C L A S S the S E C O N D.

S A L T S.

The Bodies of this Class are only three.

1. SUGAR.

2. TARTAR.

3. POTASH.

CHAPTER I.

SACCHARUM,

Sugar.

SUGAR is properly the essential Salt of the Sugar-Cane, as Tartar is of the Grape. It is, while in its crude or un-refined State, a coarse, fattish, oleaginous Matter, of a brownish or greyish Colour, with a Cast of reddish or orange Colour among it; and of a very sweet, but somewhat disagreeable Taste. When it has been purify'd and refined by frequent Solutions, and by other

other means, it becomes of a pure white, bright, glossy and crystalline, considerably hard, and of a much pleasanter, though less intensely sweet Taste.

The Plant which produces it is one of the *Triandria Digynia* of *Linneus*, and one of the *Herbæ Graminifoliæ* of *Ray*. It is described by *Piso* under the Name of *Viba* and *Tacomura*, by *Cæsalpinus* under the Name of *Canna Mellea*, and by others under that of *Arundo Saccharifera*, and *Calamus Saccharinus*. Its Root is thick jointed and creeping, very succulent, and furnished with numerous Fibres: Its Stalk grows to eight or nine Feet high, and is two or three Inches or more in Thickness, it is jointed like the Root; its Surface is smooth and glossy; its Colour is a greenish yellow: The Leaves are long, narrow, and of a yellowish green: The Top of the Stalk is ornamented with a Panicle or Cluster of arundinaceous Flowers, two or three Feet in Length, much branched, and knotted or jointed all along to their Ends. It grows spontaneously in many Parts of the *East-Indies*, in the *Canary Islands*, and in some of the hotter Parts of *America*; but its Produce is so advantageous, that it is not left to those Places, but is propagated in many other Parts of *America*. It loves a moist and rich Soil, and will grow much larger in such a one, than in more barren Ground. *Piso* assures us, that in the Province of *Rio de la Plata* the Sugar-Canes grow wild, and rise to an enormous Height, and that during the great Heats, they exsude in several Parts a white crystalline Sugar.

They propagate the Sugar-Cane by planting Cuttings of it in the Ground, in Furrows dug parallel for that Purpose; the Cuttings are laid level and even, and are cover'd up with Earth; they soon shoot out new Plants from their Knots or Joints; the Ground is to be kept clear'd at Times from Weeds, and the Canes grow so quick, that in eight, ten, or twelve Months, they are fit to cut for the making of Sugar from them. The manner of doing this is thus: They cut off the Reeds at one of the Joints near the Roots; they are then clear'd of the Leaves, and tied up in Bundles and sent to the Mills, which are work'd either by Water or by Cattle. The Reeds are here bruised and pressed, and their Juice is squeez'd from them; this is extremely sweet, and is to be boiled without loss of Time into Sugar, for if it stand much more than four and twenty Hours it grows sour, and is wholly spoiled for the making of Sugar.

The Juice is carried by Pipes into large Boilers, where it is kept boiling more or less fiercely for a whole Day together, a great deal of Scum is separated in this Boiling: After the Juice is let out of this Vessel, it is received into another in which it is boiled more briskly, and scum'd from Time to Time with a large kind of Spoon, pierced full of Holes to let the Liquor through, while it retains the Scum and Foulness separated from it in boiling: Toward the End of this Boiling they throw into it a strong Lixivium of Wood-Ashes, with some quick Lime among it; this greatly promotes the Separation of the Foulness that yet remained among it, and after it has boiled some Time with this Addition they strain it off. The Fæces left in the Cloths make a kind of Wine, when fermented properly with Water. The strained Liquor, which is now tolerable clean, is let into a third Boiler, in which it is boiled down to the Consistence of Sugar over a very brisk Fire, the People who attend it continually stirring and scumming it.

Great Caution is to be used that the boiling Matter does not rise over the

Sides of the Vessel, which would be of very dangerous Consequence: They prevent this by taking up Quantities of the boiling Matter with a Ladle, lifting it up high and letting it run in again, and by now and then adding a small Piece of Butter, or Fat of some Kind, which takes down the bubbling almost instantaneously. They are very careful that no Lemon Juice, or any other Acid of that Kind comes near the Vessels, a very small Admixture of that being sufficient to keep the Matter from granulating. When the Liquor is boil'd enough, which is known by its concreting on throwing a Spoonful of it up into the Air; it is then let out into a fourth Vessel, under which there is a very gentle Fire only kept up that it may have Leisure to granulate; when it has begun to granulate it is let out of this last Boiler into a kind of conic earthen Vessels open at both Ends, the widest Aperture is placed upwards, and the smaller End downwards, its Aperture being stop'd with a wooden Plug. It is left in these Vessels four and twenty Hours to concrete; after this they are removed into the Sugar-Houses, and are there arranged in regular Order, with a Vessel of earthen Ware under each; the Plug is then taken out of the bottom Aperture of each, and they are left in this Condition for about forty Days, that all the thick Liquor, or Melasses may run from them: After they have stood thus long to drain of themselves, a Quantity of Clay is diluted with Water into a thin Paste, and this is pour'd on the Top of every Parcel of Sugar in the Vessels, so as to cover it two or three Inches deep. The Water by Degrees all leaves the Clay, and penetrating into the Mass of Sugar runs through it, and carries off yet more of this thick foul Liquid with it, into the Vessels placed underneath to receive it.

When the Clay is quite dry it is taken off, and the first Preparation of the Sugar is now finished; they shake it out of the Vessels, and cutting into Lumps, which are of a dirty brownish, or greyish Colour, they put it up in Hogsheads, and other Casks, under the Name of grey or brown Sugar. The Sugar in this State ought to be dry, not unctuous, and to have no Taste of burning: The Liquor which has run from the Sugar in the standing is boiled to a Consistence, and sold under the Name of Melasses, or Treacle; this affords by Fermentation a very clean and good Spirit.

The coarse Sugar is afterwards refined to various Degrees of Purity by new Solutions, and is sold at different Prices, and under different Names, according to the Degree of Purity it is brought to.

A Pound of Sugar purify'd to the highest Degree, and distill'd in a Retort, yields first about half an Ounce of a limpid insipid Phlegm without Smell; after this comes over a Liquor at first limpid and colourless, afterwards reddish, and finally of an empyreumatic Smell, in Quantity not less than six Ounces, this is partly of an acid, partly of an alkaline and urinous Taste; after this comes over a thick and reddish Oil, in Quantity about three Drams; and then more than an Ounce of a brown Oil of a thicker Consistence. The Remainder in the Retort, calcined and lixiviated, yields a Dram of a pure alkaline Salt.

Sugar is a true Salt, and when perfectly pure, after Solution it concretes into regular Crystals; these are of a prismatic Figure, and consist of eight plain Surfaces, two of which the opposite Bases are equal and parallel, the rest are Parallelograms. In its natural State it manifests not the least Token of any thing

thing either acid or alkaline. It is inflammable in a great Degree, burning with a very brisk white Flame. It dissolves with the utmost Readiness in all aqueous Menstruums, but very difficultly in spirituous or oily Liquors: Mixed with Water it after a time ferments and acquires a vinous Flavour, and at this Time an inflammable Spirit like that of Wine may be drawn from it in very considerable Quantity.

The just Proportion to this Fermentation is seven Pounds of Water to one of Sugar, and to this a Spoonful of Yeast is to be added; it is then to be set in a moderately warm Place, or have a gentle Heat any way communicated to it; the Vessel it is in should be nearly but not entirely full, and it should be close shut: A few Hours standing in this State sets it to fermenting, and this grows soon very brisk, and continues three or four Weeks, more or less, according to the Quantity of the Liquor and the Heat of the Place: At the End of this Time the Liquor will be found to have acquired the Strength of Wine, and a Taste like that of Mead. And if the Fermentation be continued, it soon after loses this Taste and Quality, becomes acid, and is a Vinegar, equal in all respects to that of Wine.

Sugar was known to the Ancients; *Dioscorides* and *Galen* call it *Saccharum*, and *Theophrastus* *Mel in Arundinibus*, Honey in Reeds. *Arrian* also calls it *Mel arundineum*, and *Ægineta* *Sal Indicus*, Indian Salt. Notwithstanding however, that the Ancients were well acquainted with Sugar, they did not bring it into common Use as we do. All their Writers however mention it as a thing known. *Strabo* says that in *India* Honey, as he calls it, was produced without Bees. *Lucan* speaks of the Honey Juice of Reeds, and *Varro* tells us that a sweet Juice was expressed from the *Indian* Reeds, and was equal to Honey. *Seneca* tells us of Honey found in Reeds in *India*, and is in some Doubt whether it was a Honey Dew, as they supposed Manna to be, or whether it was the genuine Product of those Reeds. The *Greeks* indifferently called the Sugar of those Times by the Names of Honey, Salt, and Sugar. *Dioscorides* makes it a Kind of Honey, where he says, that beside the common Honey, there was another Sort called *Saccharum*, which was found in Reeds, in *Arabia* and in the *Indies*, and was like a Salt, hard and brittle under the Teeth. *Pliny* also agrees that there were Sugar Canes in *Arabia*, which produced Sugar like those of the *Indies*, but that it was inferior to that of *India*.

We find by all their Accounts, that they knew the sweet Juice of these Reeds, and that they also sometimes had sent over to them concreted Granules of real Sugar which had exsuded from the Reeds, and dried in the Sun to a Hardness; these were the Pieces of Sugar which *Dioscorides* mentions as crackling under the Teeth; and others tell us, that they were of the Size of a Pea, or at the most of a Horse Bean. It is plain however, that they knew nothing of the Art of making Sugar by boiling the Juice.

As plain as it appears that the Ancients not only knew Sugar, but knew also that it was produced from Reeds, it does not yet appear however whether they knew the very Species of Reed which we now cultivate, and call the Sugar Cane, or not. It is very certain that there are other Plants which may be called Canes and Reeds, and which produce Sugar in the *Indies* as well as this: The *Bambu* Cane in particular is remarkable not only for producing

ducing Sugar, but for having it exfudate and concrete in Granules on its Surface, though in no great Quantity. The *Indians* call this *Sacar Manba*, but they do not boil its Juice.

Salmafius from *Varro*, and some other of the Ancients, talking of the *Indian* Sugar Cane, as growing to the Height of a moderate Tree, seems positive, that the *Bambu* was the only Kind they knew; but though it may appear evidently enough from this, that they knew the *Mambu* or *Bambu*, it does not appear hence that they did not also know the common Sugar Reed of our times; which indeed it seems in some measure proved that they did, by *Lucan's* calling it the *tenera Arundo*, a Term no way applicable to the *Bambu*.

The native Sugar, or the concreted Juice of the Sugar Cane produced by mere Exfudation and hardened on its Bark, was more frequent in the ancient times than now, because older and larger Reeds are more disposed to produce it. It was also more carefully collected when there was no other to be had; but now that the Canes are cut down at a Year's Growth, and the Sugar procured in such infinitely greater Quantities by boiling, it is not wonderful that little of the native Sugar is produced, or what there is is but little regarded.

The *Arabians* all mention three Kinds of Sugar: 1. The *Sacchar. arundineum* of *Avicenna*, which was found naturally exfudated on the Sugar Canes now propagated. 2. The *Tabaxir* of the same Author, which was the native Sugar of the *Bambu*: It appears probable also that these Authors understood by the same Name a coarse Kind of Sugar produced by Art, for they speak sometimes of *Tabaxir* resembling Ashes, and imagined it to be the Ashes of the Sugar Canes. 3. The *Sacchar. Albusar*, or *Albaster*. This they also called *Manna*. It differed from the common Sugar in many Respects: It had little Sweetness, but much of a bitterish Taste. It exfudated from the Plant they call *Albusa*, in the same manner as their *Manna* did from the *Albagi*, and they therefore called it *Manna*. This Sugar is not now known in *Europe*; but in *Ægypt* and *Arabia* they are well acquainted with it. The Plant it exfudates from is the *Beid-el-Offar* of *Prosper Alpinus*.

The Sugar produced by this Plant was indeed probably very different from that of the Sugar Cane; this being of the *Apocinum* or Dogbane Kind, and its Juice so acrid, as to be used as a Depilatory.

Beside these, there are many other Plants and Trees which produce Sugar. The Maples of several Species afford a Juice which boils into a very good Sugar, and *Borrichius* mentions a much more singular thing, which is a Sea-Plant of the *Alga* Kind, much like the *Alga Vitrariorum*, and which he calls *Alga Saccharifera*, which is thrown up on the Shores of some Islands, and which, when it has lain some time exposed to the Sun, is covered with little Granules of a dusky Colour, which are sweet like Sugar, and are collected by the Natives to be used for all the Purposes of it.

It would be easy upon the whole to find many other Plants whose Juices would boil into Sugar; but the great Quantity of it yielded by the Sugar-Cane and its easy Culture, make it unnecessary to look farther after what it so abundantly supplies us with.

Attempts have been said to have been made by the French in Canada to obtain it from *Sorallen* in the folded leaves of which a strong solution is found in a very extraordinary quantity: Endeavours have also been used in some of our colonies to obtain it from a kind of maple. But none of these have yet been brought to the state of an established manufacture. *Institute of Chemistry Vol. 2 p. 69 -*

Many of the Indians employ Sugar instead of Salt for preserving Provisions, which it does effectually without communicating the Unsalutary Qualities of Salted meats. *Newman p. 330.*

This Acid of Tartar cannot be separated from it, either by a gentle or strong Heat,
~~by~~ Distillation; nor even by depaction, through any of the stronger Acids.

in abt 20 times its Quantity.

CHAPTER VI.

TARTARUM,
Tartar.

TARTAR is a hard and almost stony Separation from a vegetable Juice after Fermentation. It is the Produce of Wine, and is found adhering in large Masses to the Bottoms and Sides of Casks, in which that Liquor has been long kept. We meet with it in large Masses of an irregular Figure, and more or less dense Texture, without Smell, and of a sub-acid Taste.

The common crude Tartar is of two Kinds, the white and the red; this Difference of Colour being owing to that of the Wine they are produced from, is of little Consequence in itself, but it is an Indication of more essential Differences in the Matter. The white Tartar is much more pure and clean than the red, and is, though equally hard, considerably less heavy. We have this principally from *Germany*, where it is at times cleared off from the Sides of very large Vessels, in which they keep their white Wines for many Years. The red Tartar is brought in large Quantities from *Italy* and some Parts of *France*. The white Tartar is to be chosen for medicinal Use, and particularly such as is of a compact Texture, not spongy or cavernous when broken, and free from Dirt or other Foulnesses, and such as has a Sort of Crystallizations on its Surface.

Tartar is, properly speaking, the essential Salt of the Grape. The Ancients made no Distinction between Tartar and the Lees of Wine. In Truth the Lees of Wine and Tartar have both the same Origin, and differ very little. Wine after due Fermentation, and when put up into Vessels, deposits two Substances, the one sinks to the Bottom of the Vessel, and is thick, foul, and muddy, but still in some Degree fluid; this is properly what we know by the Name of Wine Lees: The other separated Matter is solid and hard; it adheres to the Sides of the Vessel, and even to the Bottom itself under this liquid Matter, and forms a thick Crust which sticks to it in the same manner as the Crust of sparry Matter adheres to the Insides of our Vessels, in which Water is frequently boiled. This solid Matter is Tartar. Tartar contains but little of the spirituous Part of the Liquor from which it was formed; but the Lees of Wine on the other hand abound with Spirit, they even contain more, and yield more of it by Distillation than the Wine itself.

Tartar contains a large Portion of acid Salt and of an Oil, in part thin and limpid, in part thick and coarse. It affords a small Portion of a volatile alkali Salt in Distillation, and the Residuum yields a very large Proportion of fixed Alkali. It is to be observed that both these Alkalies seem in some Degree Creatures of the Fire; for neither of them manifest themselves either by their Taste or Qualities in the Tartar, any more than in many other Substances, which yet afford much of them an Analysis, till they have passed the Operation of the Fire.

Tartar dissolves in boiling Water, but very difficultly in cold, and even when purified and brought to the State of what we call Crystals or Cream of Tartar,

Tartar, it retains the same Quality. Tartar is scarce ever given internally in its crude State. The Preparations of it now in Use are these.

CRYSTALLI TARTARI,

Crystals of Tartar.

Powder a Quantity of white Tartar, and boil it in a sufficient Portion of Water till it be in great Part dissolved, the Foulness only remaining behind. Pour this Decoction while hot through a double Flannel-Bag; let it stand till cold, and there will be Crystals formed at the Sides of the Vessel: These are the Crystals of Tartar. They may be dissolved by boiling a second Time and set to shoot again, and by this means they will be rendered the more pure. The *French* who prepare great Quantities of these Crystals about *Montpelier*, first dissolve a small Quantity of a white Earth of the Nature of Chalk, in the Water in which they are to be boiled for the second Solution. This Earth renders the Water milky, but the Crystals shoot perfectly clear in it; and whatever Foulness they carried with them at the first Shooting, will be by this means more perfectly separated from them.

It used to be a Custom to separate first the Salt which shot to the Top of the Liquor in Form of a thin Skin or Film, and this was supposed purer than the rest and called Cream of Tartar; but it is wholly the same with the Crystals that shoot to the Sides of the Vessel, and no body now troubles himself to keep it separate. The Crystals of Tartar, or as we commonly express it, Cream of Tartar, is a gentle Purge. It attenuates and resolves tough Humours, and is good against Obstructions of the Viscera, and in cachectic Complaints. *Angelus Sala* recommends it in Preference to all other Medicines against the Cholic: He tells us, that he was himself miserably afflicted with that Disease, and that after trying many things in vain, a Dose of six Drams of Crystals of Tartar dissolved in warm Broth cured him; and a Repetition of the same Medicine three or four times at proper Intervals, prevented a Relapse. Crystals of Tartar are very conveniently mixed with other purging Ingredients by way of a Stimulus: To this Purpose a Dram or two is the proper Quantity; but when taken as a Purge alone, half an Ounce, six Drams, or an Ounce is to be taken, according to the Strength of the Patient. It is a very good Adjunct to Chalybeate Medicines, assisting them greatly in opening Obstructions.

SAL TARTARI,

Fixed Salt of Tartar.

Take any Quantity of Tartar at Pleasure; put it into a Crucible and calcine it six or eight Hours in an open Fire; then pour boiling Water on it, and set it over the Fire till all the Salt is dissolved. Filter the Solution and evaporate it to a Dryness in a Sand Heat: There will remain at the Bottom of the Vessel a white fixed alkaline Salt. If it is not so pure as it ought to be, dissolve it in fair Water; filter the Solution, and evaporate it to a Dryness as before; after which it may be calcined for half an Hour in a Crucible; it will then be perfectly pure, and must be kept in a Vial close stopped, for it easily melts if the Air be suffered to come at it.

If this Salt be exposed to a damp Air, as in a Vault or other such Place, in a flat earthen Vessel, it runs into a heavy Liquor, which is to be filtered to separate it from any Foulness it may have accidentally contracted, and is the *oileum Tartari per Deliquium*, the Oil of Tartar *per Deliquium*. The

Tartar Solubile

Take a solution of Lixiviale Salt, add to it gradually, while of a boiling heat, Crystals
or Cream of Tartar powdered, as long as any Effervescence appears. Filter & Evaporate.
This Salt is of Peculiar Nature; being formed by a Combination of a Subacid with a fixt
Alkaline Salt; it does not agree with neutral Salts on account of its suffering a decomposition
on combination with any Acids; nor yet being alkaline, because it is neutralized
in a certain degree by the combination of a subacid Salt; it may be ranked with Borax
under the Name of Subalkaline. Institutes of Chemistry, Vol. 1. p. 801 -

This Salt was sold at an extraordinary price under the Name of Sille de Nigues

✓ The Specific Gravity of Oil of Tartar is greater than any of its Ingredients of which
it is composed. Arbuthnot on Air p. 5.

Neutralized by Vinegar it makes of Sal. Diureticus. Antiquis Romae Notum
Cinis Camentorum Aceto Conspersus ad Vitis Splenis bibitur Pliny xxiii
in Proemio—

I apprehend the Brown Color of this Tincture is owing, ^{rather} to some decomposition of
the Spirit of Wine in the Process, than to an Impregnation of of Sal. Tartar.
for it is now generally agreed up no Part of the Salt can be taken up by the
Spirit; though probably some of the oleaginous matter of the Salt may be taken up
by ~~the spirit~~ it.

The fixed Salt of Tartar is very acrid and caustic, some attribute great Virtues to it as a Diuretic; and our Apothecaries too frequently use it in the Place of Salt of Wormwood. They indeed buy it as such, and what is yet more unfair in the Seller is, that what he calls by either of these Names of Salt of Tartar or Salt of Wormwood, as it is more or less purified is often not truly either, but is prepared from the common *Russia* Potash dissolved and purified. This fixed Alkali is of great Use in opening the Bodies of resinous and sulphureous Subjects, and making them yield a stronger Tincture to Spirit of Wine or to Water than they otherwise would do. It is often mixed also with Purges to quicken their Operation. Caution ought to be taken whenever it is given internally, either that it be first dissolved by an Acid, as in the saline Draughts, or else blended with a large Quantity of Liquor, to prevent its proving too acrid as it passes the Oesophagus.

TINCTURA SALIS TARTARI,

Tincture of Salt of Tartar.

Put a Quantity of Salt of Tartar into a good Crucible; set it in an open Fire, and calcine it for some Hours, raising the Fire at least to such a Degree as to make the Salt ready to melt; then pour it out of the Crucible into a clear Marble Mortar; grind it some time, and then while yet hot, put it into a Matrafs heated before hand; pour a Quart of rectified Spirit of Wine on four Ounces of this calcined Salt, and let it stand in a Sand Heat three or four Days, in which Time, if the Process have been rightly managed, the Spirit will become of a strong yellowish Colour, and it is then to be filtered off for use.

People who make this Tincture, find it difficult to give the Spirit the true Colour, if the Salt be perfectly pure: It always succeeds better if it have some Degree of Foulness, and to make it secure; they have often the Artifice to throw a little Charcoal Dust or Wood Soot upon it while calcining, in which Case the Tincture is always well coloured. This Tincture is attenuant and resolvent. It is given from ten to thirty Drops. It is also of great Use in the extracting the Tinctures of vegetable and mineral Substances, which would not impart any Colour to simple Spirit of Wine.

CHAPTER III.

CINERES RUSSICI,

Potash.

POTASH in general is an impure fixed alkaline Salt, made by burning from Vegetables. We have several Kinds of it in Use in the various Manufactures, but what is best for medicinal Purposes, and is now expected to be used in the Shops, is the *Russian* Kind, which is made in a different manner from any of the others, and has therefore peculiar Properties which they must necessarily want. It will be seen by the several Analyses of Vegetables in this Work, that one of their Principles is an Acid, and that this Acid is volatile, and is sent up in Vapour in burning. It may seem odd to those who look upon Potash to be a mere fixed alkaline Salt, to observe that the Want of an Admixture of this Acid renders it defective. Yet nothing is more

certain than that Potash and pure fixed Alkali differ; that pure fixed Alkali will not answer the Purposes of Potash in many of the Manufactures, and that no good Potash can be made without an Admixture of this Acid. It is evident that this volatile Principle must be lost in the Calcination, nay in the very reducing the Wood to Ashes; it is for this Reason that all the Potash in the World made only by burning and Lixiviation wants it, and is therefore defective. The *Swedish* and *Russian* alone have it, and they are therefore, properly speaking, alone true and perfect Potash, fit for the Purposes of our Manufacturers of several Kinds. These *Swedish* and *Russian* Kinds are divested of their native Acid in the first Process of burning; but it is peculiar in the after Management of the Works, that it is restored to them again from other Wood: This will be evident in the Process itself; but before that is delivered, it will be proper to observe what are the several Kinds of this Salt now in Use: These are principally five. 1. The *German*. 2. The *Spanish*. 3. The Home-made. 4. The *Swedish*. And fifthly the *Russian* Kind.

The *German* Potash is a tolerably white Salt, very pure, not very hard, of a very acrid Taste, and growing damp if kept in a moist Air.

The *Spanish* is a somewhat less pure Salt than the *German*, moderately hard, often of a blueish Colour, and of a less acrid Taste.

The home-made or *English* Potash is a coarse brown or blackish Kind, harder than either of the former, and yet more easily growing damp in a moist Air.

The *Swedish* is blacker and fouler than the *English*, and of a much greater Hardness. It also runs easily in a damp Air, and is principally distinguished from it, by the wanting certain long and black Streaks seen in the other, and are owing to Straws mixed in the making with the Salt.

The *Russian* Potash, is the hardest and darkest coloured of all. It is brought to us in large Masses, almost as hard as Stones, and yet of all the Kinds is the soonest affected by a damp Air, and runs into the thinnest Fluid by means of it.

The *German* Kind is what is commonly sold among us under the Name of Pearl Ashes. The Manner of making it is this. Large Quantities of Wood are burnt, and the Ashes produced by them are boiled in Water; the Water when it has thus taken up the fixed Salt they abound with, is set by to settle till very clear, and is then evaporated to a Dryness, and the Salt we meet with under the Name of Pearl Ashes is left behind. They use all Sorts of Trees indiscriminately for this except the resinous Kinds, which yield little or no Salt. This is a good Alkali, and answers very well for several Purposes. But where what is properly called Potash is required, that is where a Salt sated with the volatile Acid, and Oil of the Wood are wanted, there it cannot do.

The *Spanish* Potash, called *Barilia*, is made by one Operation, and without the Trouble of boiling and evaporating. The Plant it is made from is a Species of *Kali*, the *Kali Hispanicum supinum annuum sedi foliis brevibus*. They sow this Plant in Fields as we do Corn, and at a proper Season cut it and dry it. They then build up certain Kilns of Stone for the preparing the Potash; they throw in a handful of the Herb and set it on Fire, they throw more upon it, and as this burns away, they add more, and this they continue to do till the

Kiln

If the Incineration of burnt Vegetables, is imperfectly performed & the salt is not
freed from the burnt Oil of the Vegetables, it will be less vivid & alkaline. A salt so prep^d,
called Pot-ashes; & is chiefly consumed in the making Soap, the marble Colour of
is owing to this Impurity.

Kiln will hold no more ; they then cover it up and leave the Fire to do all it can by itself ; when all is cool they open the Kilns, and find the Ashes calcined, and as it were vitrify'd, being concreted together in a hard Mass at the Bottom of the Kiln, which they dig out and send to Market. There is in many other Parts of the World a kind of Potash, made in the same manner from the common Kali of the Sea-Coasts, but this is much inferior to the *Spanish* Kind.

The home made Potash is more like the *German* in its Preparation, than it is to the latter, but it is very different in its Colour, and in some of its Qualities. Fern, and other useless Plants, are collected in large Quantities and burnt to Ashes ; these Ashes are boiled in Water, and when that Liquor has taken up the whole Quantity of Salt contained in them, it is pour'd off and set by to settle ; it is then pour'd clear into a large Tub, placed near a Hearth for burning on, and a Parcel of Straw being laid by it, a loose Handful is dip'd into the Liquor and immediately set on Fire and left on the Hearth to burn ; this is cover'd while flaming with another Handful of the Straw, and others dip'd in the same Liquor are added as the former burn away, till by this means all the Liquor has been taken up with the Straw, and the whole burnt. They then find the Salt that was in the Liquor concreted into a sort of hard Cake upon the Hearth, and full of the Fragments of black or half burnt Straws ; they take this up ; and pack it in close Barrels for Sale.

Both these latter Kinds contain something of the necessary volatile Part of vegetable Matter ; the one preserved in the burning, by covering up the Kiln before it is quite carried off ; the other by the Addition of fresh Matter from the Straw, but this is in small Quantity. The *Swedish* and *Russian* are the only Kinds that have this volatile acid Matter properly combined with them, they are divested of it like the others in a great measure in the first burning, but it is added to them afterwards, from fresh vegetable Matter, which they are calcined with. The Method of making the Potash of these two Countries need not to be laid down separate, the only Difference is, that the *Swedes* use decay'd Wood, which yields less Salt, and use common Water in the latter Part of the Process, in which the *Russians* use a Lye ; by these Means the *Russian* Potash is produced in larger Quantities, and is stronger than that of *Sweden*, which otherwise resembles it. The Process is this.

They cut down all kinds of Trees that their Woods afford, except the resinous ones, such as the Pine, and Fir Kinds, and the like : They pile up a Heap of their new cut Wood, which they cover on the Surface with Turfs of Earth pretty thick, leaving only certain Apertures at the Top and in the Sides ; they then set Fire to the Bottom of the Pile, and watching it to stop up any Crack that may happen in the Covering, which they do with wetted Clay, they reduce the whole to Ashes, of which they have by this means considerably more than double the Quantity they would have had, if the Wood had been burnt in the open Air. When all is cool they take away the Turfs, and with a kind of fine Rakes of Iron they separate the coarser Matter, the imperfectly burnt Coals, &c. from the fine Ashes : They then with a somewhat coarser Rake separate from this foul Matter the larger Coals, Clods of Earth, &c. and the Remainder, which is principally Ashes, though too foul to mix with the fine Quantity, they boil in large Vessels of Water, making a very strong Lixivium with it.

With this Lixivium they work up the fine Ashes, from which the coarse ones were separated into a kind of stiff Paste, by treading, and beating them with wooden Instruments. When the whole is thus perfectly mix'd, they cut down a large Quantity of Fir, Pine, or some other resinous Wood, which has the double Advantage for them of burning easily, and of containing a large Quantity of Acid. They cut this new Wood into long Pieces, they lay a Row of these upon the Ground for the Base of a new Pile, and over this they lay a second Row crosswise. This chequer'd Foundation they cover a Foot thick with the Paste they have made of their Ashes and the Lye; they then lay another Bed of Wood, and cover this in the same manner with a Bed of the Paste; and when they have continued this till their whole Quantity of Paste is expended, which sometimes serves to raise a Pile of thirty or forty Feet high, they set Fire to the Wood at the Bottom; the Fire soon communicates thro' the Beds of Paste, and the whole Pile is seen to be one Mass of terrible Fire; the extreme Force of this Heat soon makes the Beds of Ashes melt and run: When the whole is in this State, which always happens before the Wood is reduced to Ashes, they with long Poles throw down the Pile, and spread the whole upon the Ground; they then gather round it while burning as it lies, and the Salt running among it, and with long Poles of a green and tough but very pliant Wood they beat it in every Part, and by this means at once put out the Fire, and more perfectly mix the running Salt with the less melted Part; they find the Potash, after this Process, collected in Cakes as hard as a Stone about the Logs of Wood, and separating it by striking it with large Hammers, they pack it up for Exportation.

This is the *Russian* Potash, so greatly preferable for many Purposes to all the other Kinds; it is evident that this receives again that volatile acid and oily Matter, of which the Ashes were divested in great Part by the first burning, from the fresh Wood employ'd in the calcining it, and this Wood being of the resinous Kind, has more of it to add than was originally in the Matter it was form'd of.

The *Swedes* have much the same Method of working in the making Potash, and probably the Secret has been carried from one of these Places to the other by the Workmen; but the *Swedes* are not suffered to cut down any Wood but such as is in a decaying State, which yields less Salt than such as is found; and they not only perform the Process in a more imperfect manner, but want some of the essential Parts of it.

The Uses of Potash in the Manufactures is very great. The Soap and Glass Trades consume a vast deal of it; and the Bleachers, Dyers, &c. a great deal more. In Medicine the *German* Kind, or Pearl-Ashes, serves our Chemists in the Place of alkali Salts, that would come dearer, or be more troublesome in the procuring, but this very improperly and unfairly. The *Russian* Kind serves to make the medicinal Lees, and Soap, and the common Caustic; and no other sort ought to be used for either of these Purposes.

LIXIVIAM SAPONARIUM,

Soap Lees.

Take *Russia* Potash, and quick Lime, of each equal Quantities, throw Water on them a little at a Time till the Lime is slak'd; then throw on some more Water,

Water, and stir all together till the Salt of the Potash is dissolved, let it stand to settle, and then filtrate the Liquor into another Vessel for Use.

A Wine Pint of this Ley, measured with the greatest Exactness, ought to weigh just sixteen Ounces; if on Trial it is found to be heavier than this Standard, for every Dram it exceeds in Weight, an Ounce and a half of Water is to be added to the Pint; but if it be lighter than this it must be evaporated to the Standard, or thrown upon more Lime and Potash till it answers perfectly to it.

As this is call'd Soap Lees from its Use in making Soap, People are apt to save themselves the Trouble of making it, by buying it of the Soap-boilers; but it is to be observed, that the Lees used in making soft Soap are much stronger than the Kind ordered for medicinal Use; and that those who buy them, ought to reduce them to the proper Standard, by mixing a large Quantity of fair Water with them; there usually requires near an equal Quantity of Water to do this, and it ought to be done exactly and regularly to the Standard.

SAPO AMYGDALINUS,
Almond Soap.

Take a Pound of Oil of sweet Almonds fresh drawn, and three Pounds of Soap Lees, of the Strength just described, set them over a gentle Fire, and keep them just boiling for two or three Hours; the Oil will in this Time unite with the Lees, and the Mixture will become ropy and semi-transparent, and when cool will be a sort of Jelly; when the whole is in this State, add Sea-Salt till the matter has lost its Ropyness, and after this continue the boiling, till, on taking out a little of it and dropping it on a Marble, the Water is seen to separate readily from the coagulated Soap; then remove the Fire and the Soap will gradually rise to the Top of the Liquor: It is to be taken out before it is cold, and put into a wooden Frame with a cloth Bottom, and after this it is to be taken out and set by till it acquires its just Consistence.

A Soap may be made in the same manner with Oil Olive, but the finest Oil must be taken, the coarser Kinds making it not only disagreeable to the Palate, but to the Stomach.



THE
H I S T O R Y
OF THE

Materia Medica.

PART the THIRD.

OF THE
BODIES used in MEDICINE,

Belonging to the

ANIMAL KINGDOM.

ANIMALS are organiz'd Bodies, consisting of various Parts, having Vessels furnished with different Juices, a continued Canal reaching from the Mouth to the *Anus*, and vascular Parts within themselves, by means of which they take up the Matter of their Nourishment and Growth, from the Food swallowed at the Mouth before it is discharged at the *Anus*.

The medicinal Substances furnished by the animal Kingdom, may, like those afforded by the vegetable, be primarily divided into three general Kinds, as they are,

1. ENTIRE ANIMALS.
2. PARTS of ANIMALS.
3. PRODUCTIONS of ANIMALS.

Of the Animals used entire in Medicine, there are three Classes.

1. INSECTS.
2. REPTILES.
3. FISH.

The Parts of Animals used in Medicine, may be arrang'd under six Classes.

1. HOOFS.
2. HORNS.
3. BONES.
4. TEETH.
5. CLAWS.
6. SHELLS.

The Productions of Animals used in Medicine, may be arranged into two Divisions.

1. The NATURAL PRODUCTION.
2. The ARTIFICIAL ONES.

Of the natural animal Productions there are four Classes.

1. STONY CONCRETIONS.
2. SOFTER CONCRETIONS.
3. SECRETED JUICES.
4. COLLECTED SUBSTANCES.

Of the artificial animal Productions there are also two Classes.

1. The GLUTINOUS.
2. The OLEAGINOUS.

ANIMALS

A N I M A L S

Used in MEDICINE entire.

CLASS the FIRST.

I N S E C T S.

Of these there are four.

1. KERMES.

2. COCHINEAL.

3. CANTHARIDES.

4. MILLEPEDES.

CHAPTER I.

KERMES.

THERE cannot be any Subject so proper for us to rise from the vegetable to the animal Kingdom by, as the Kermes: No Animal has so little the Appearance of one: A great Part of its Life is spent without the great and obvious Characteristic of an animal Locomotion; and that the very Part of its Life in which it is most exposed to our Observation.

Kermes, as brought to us for Use, is a small roundish Body, of the Bigness of a Pea, and of a brownish red Colour; cover'd, when most perfect, with a bluish or purplish grey Dust, like the fine Bloom on a ripe Plum, which is easily rub'd off by touching. It is when cut found to be a mere membranaceous Bag or Case, containing a multitude of little distinct Granules, which are soft and juicy, and when crush'd between the Fingers afford a Scarlet Juice. The Kermes has an agreeable Smell, and is of a somewhat acrid and bitterish but far from disagreeable Taste.

It is in this State found adhering to the Leaves and young Shoots of a kind of *Ilex* or Holm Oak in the warmer Countries, and always possesses some fix'd Place, without any Appearance of Life or Motion. This is the State in which we have been used to receive this valuable Drug, and this all we have been informed for a long Time as to its History. It is therefore no Wonder, that till very lately, the World in general has understood it to be a vegetable Excrecence, growing on this kind of Oak as the common Galls do on the common Oak. It had been long suspected by some, to belong so far to the animal Tribe, as to be the Produce of some Wound or Puncture made in the Bark and Leaves of this Tree by an Animal, but we are at length arrived at its full History, which is too singular a one not to be given at large here. We now know it to be the extended Body of an animal Parent, no way altered but by such extension, and filled with a numerous Off-spring, which are the little red Granules we find in it, and which it has given Life to at the Expence of its own.

The Knowledge of this Part of natural History we owe wholly to our ingenious and indefatigable Neighbours, in this way, the *French*. *De la Hire*, and *Sedileau* were the first who set the Observations on Foot that led to this Discovery: They found a Creature which remained a great Part of its Life fix'd to the same Spot on the Leaves of Orange Trees, and other Shrubs preserved in our Stoves, and which had been long mistaken for an Excrecence of the Plant, to be truly and perfectly of the animal Kind: After this Observation, our Fruit Trees were found to be often cover'd with Animals very different indeed from the former, which has been since call'd, the Green-house Bug; yet so far of the same Kind, that they were a long Time, properly all the Time in which we observed them, fix'd and motionless: And finally, Dr. *Emerick* observed the Kermes on the *Ilex* in three States, in the first of which it had all the Characters of an Insect, though it afterwards gradually lost them in the other two. The sagacious *Reaumur*, following this Discovery, found the Kermes to be truly of the animal Kingdom, and to be one of the genuine Species of these torpid Animals of our common Fruit Trees; his future Observations discovered to him many more of them, and he at length arrang'd them together in one Class, to which, from the great Resemblance they all bear to Galls, he gave the Name of *Gallinsects*.

The general Characters of all the Insects of this Class are, that they pass much the greater Part of their Life, and that the very Part in which they grow most, and are most exposed to our Observation, in a fix'd Position, in which they are apply'd close to the Leaves and Branches of Trees, and this they never alter, for they all perish under it. In this State they seem to make one Piece with the Branch they adhere to, and may easily, by a common Observer, be supposed a little Set of Protuberances growing on it. There is nothing in their exterior Figure that could lead any one to suppose them of the animal Kind; the larger and more perfect they grow, the less Resemblance of Life they have; and at the very Time when they are employ'd in laying Eggs for a numerous Progeny, they have no other Appearance than that of an accidental Protuberance of the Tree.

All our Fruit Trees, and many other Kinds, many also of the perennial Plants are found at Times inhabited by these Insects, but they are of various Species and Shapes: Some are of the Figure of a perfect Globe, and are fix'd to the Branch they live on only by a very small Part of their Circumference; others are of the Figure of a Sphere a Segment of which has been cut off and are fix'd to the Branch at the Segment; others are of an oblong or oval Form; others are flatted, and pointed at one End; others are of a kidney Shape; and in fine, others, which are a very numerous Kind, are of the Figure of half an oblong Spheroid cut lengthwise.

After having thus established the Genus of Animals, to which the Kermes belongs, it is to be observed, that it is of the number of those which are of the Figure of a Sphere with a Segment cut off; it is affix'd to the Branch by that Part, and when in a State fit to be collected for Use, it seems a mere Purse or Bag of this Figure, composed of a tough and strong Membrane, cover'd with the fine blue grey Powder beforementioned. This is indeed often lost before the Kermes come to us, and sometimes we meet with them merely of a brownish red Colour, but the Kermes in its natural State has no Redness; they

give it this Colour by the Vinegar they use in wetting it, in order to prevent the young Animals from coming to Life, and rendering the Commodity of no Use.

So eminent and so late a Naturalist as Count *Marfigli*, after a very laborious Inspection of the Kermes, declared them to be a kind of Galls, and not of the Insect or Animal Class; but the common People in the Countries where this Drug is collected, and who find it greatly worth their while to watch their growing Riches, are much better informed of their Nature; they distinguish three different Periods of their Lives, in which they have as many very different Appearances, and in the first of which it is extremely easy to distinguish that they are Animals, though they afterwards gradually lose that Form.

It is in the Month of *March* that they see them in their first State; they are then found on the Branches of the *Ilex*, fix'd in the Places where they are to remain, and are of the Size of a Grain of Millet, but somewhat oblong, so as to resemble in some Degree the Figure of a small Millepede; they are at this Time of a reddish Colour, variegated with extremely small Spots of yellow, and mark'd with several transverse Furrows over the Back; they have six Legs, which a good Eye will easily distinguish, though the Creature makes no Use of them as such, and on the Head stand two Antennæ or Horns, as they are usually call'd in the Insect Tribe; these are moveable and are of the length of the whole Body: Its Eyes are black and shining; and its Tail is forked, and nearly as long as its Body, but it is never moved. From this Time the Creature begins to encrease in Size, and as it does so it proportionally loses its Shape, and by Degrees all Appearance of an Animal. If it be observed, with the help of a Microscope, as it is beginning to encrease in Size, it will be found to have a kind of cottony Substance about it, which afterwards grows into so long Threads about its Sides, and under its Belly, as to make it a sort of Nest: The Back, as the Creature encreases, or more properly as it swells or becomes distended, rises into a convex Form, but the whole is yet oblong, and toward the End of this Period it is of the Figure of the half of a Plum of the longer Kinds: The Figure of the Head becomes lost, and in the Place of it there are only seen three Protuberances, the middle one of which is largest and round, the others oblong and crooked about the Middle.

The second Period of its Growth is in the Month of *April*. It has by this Time become so much more distended, that its oblong Form is wholly lost: It is now round, and of the Bigness of a small Pea; its Skin is become much firmer and tougher than before, and the cottony Matter, which at first grew out of it in Threads, now appears in Form of a fine Powder sprinkled all over it. It has at this Time lost all its Characters as an Animal, and indeed all Appearance of any, and seems a mere Bag fill'd with a pale reddish Juice.

The third and last Period is in the Month of *May*, at which Time it is in its Perfection, and is fit to be gathered. In this State there are found within this Case or Bag, and under the Belly of the Animal, a multitude of little Granules of an oval Figure, and of about half the Bigness of a Poppy Seed; these are of a pale reddish Colour, spotted with yellow, and consist of a thin Membrane which is pellucid, and is fill'd, as the Parent Animal a Month before was, with a pale red thin Liquor, resembling a watery Blood. These are the

the Eggs of the Parent Animal which is now dead, and is become a mere Case for the retaining them. There are not much less than two thousand of these in each Case. As the Kermes grows to its round Figure, and begins to lay its Eggs, the Line which marks the Edge of the Segment, as we have called it, on the Plane of which the Creature is fixed to the Tree, is exactly every where laid close to the Bark of the Branch. All above this Line we may call the Back of the Animal, and all underneath it the Belly; the first is convex, the other plane: That Part of the Branch to which this Limb or Margin of the Body is affixed, is covered with a fine and thin Bed of a downy or cottony Matter, of a close and firm Texture, which is also extended all the Way under the Belly, making a firm Base for it, and is fixed much more strongly to that Part of the Body where the Belly and Back join, than to the Tree. When the Creature begins to lay the Eggs we have just named, it does not, like other Animals, thrust them out from under its Body, but it lodges them between the Skin of its Belly and the cottony Membrane or Bed just named. As the whole Distention of the Body is at this Time owing to the Eggs that it is filled with, the Space between the Belly and the Cotton will be rendered very easily and naturally, sufficient to contain them; for as they are thrust out of the Body, and lodged in this Cavity, the Skin of the Belly is pressed more and more towards the Back: In this manner the Kermes lays its Eggs without ever exposing them to Sight, or to the Injuries they might be in Danger of from other Insects; they are hid under her Body, and as the Cavity between the Belly and the Cotton becomes greater, that within the Body becomes smaller, till in fine, when the Eggs are all laid, and form a round Heap within the Case of the Animal, the Skin of the Belly is pressed backwards and upwards, so as almost to touch the Back, the Intestines and Ovaries only being between, and these in the flaccid State they are now in, taking up very little Room.

It is a general Rule of Nature, in regard to the Insect Class, that they die as soon as they have fully answered the great End of propagating their Species. It is not excepted against in this Creature. When she has thus laid all her Eggs, she dies soon after, remaining fixed to the Spot where she was: Her Body is a mere Case, serving to defend and cover the Eggs from external Injuries in the Manner of a Coat or Shell, and the downy Membrane is so well fixed to the Rim of this Shell that no Insects can get in between to destroy them. It is in this State, the Animal being dead, and the Eggs in Perfection under it, that it is gathered for medicinal and other Uses.

The Kermes are of different Size and in different Quantity, according to the different Soil, Situation, and Age of the Trees on which they are found, and to the different Seasons. Those Trees which are old, but not tall, and which appear least vigorous and healthy, afford the greatest Quantity of Kermes. The Reason of this seems, that the Creatures have been longest established on these, and breed in greatest Abundance there, merely from their greater Numbers. Those Trees which grow near the Sea are always found to afford the largest, finest, and best coloured Kermes; and a mild Winter and not too cold Spring are usually succeeded by large Quantities of them.

The Women are principally employed in gathering them; they do it early in a Morning while the Dew is on the Trees, as the Prickles on the Leaves

are less rigid at that Time. They use no Instrument for the gathering them but their Nails, which they suffer to grow long for that Purpose, and with which they scoop off the whole Kermes cleanly from the Bark or Leaf; there are Women who know where to look for the greatest Clusters of them, that will get two Pound or more in a Morning.

When they have gathered them, they expose them to the Sun, and sprinkle them with Vinegar to destroy the Principle of Life in the Eggs, otherwise they would hatch, and a great Part of the Value of the Drug would be lost.

It is in the End of *May* that the Kermes is gathered for Use, and in general no more is thought of this Production till that Time the next Year: But if the Season prove very favourable, they sometimes find a second Crop in Autumn. The Kermes of this second Gathering are however always smaller and worse coloured than the others, and are of less Value on all Occasions.

It is in this Case with the Kermes, as with several other Kinds of Insects, that are naturally destined to produce their Young but once a Year, but which in very favourable Seasons will do it twice: The Butterflies of several Kinds are liable to this Accident, and we have often, in opportune Seasons, two Generations instead of one in a Year of them.

Such is the History of the Kermes, as it appears to the People employed in the gathering it for Use, during the several Stages in which it falls under their Observation: But there remains yet more to be explained as to its Nature and Propagation. There are many of the Insect Tribe, the Males of which are winged, and the Females mere Reptiles without Wings. The Kermes is of this Kind, and indeed the Article of Wings is not the only one in which the Male differs from the Female. When the Kermes is left on the Tree, the Eggs hid under the Shell, which was once the Body of the Animal, hatch into extremely minute young Animals; these remain some time under the Shell, which had served to defend the Eggs, after which they make their Way out, and crawl about the Branches of the Tree, but are too minute to be observed, and too unlike the Kermes when full grown, to be supposed by a vulgar Eye to have any Connection with it, though they were seen. Of these young some continue always creeping on the Tree, and are Females; others have Wings, these are the Males: They are a small Fly extremely unlike the Females, and are found hopping or flying about the same Trees. They are very small, their Bodies are somewhat thick, and they have six Legs; the four anterior ones are short, the two hinder ones very long; each is divided into four Joints, and terminated by three Claws. There are a Pair of fine Antennæ on the Head, these are considerably long and very moveable, and are jointed or else striated transversely. They have a Sort of Tail at the other Extremity of the Body, which is bifid or divided into two Parts. The Wings are only two, they are transparent, but of a somewhat whitish Colour, and are so large, that they cover the whole Body; they fly very briskly with these, and they have beside a Power of hopping by means of their long hinder Legs, and will throw themselves as far forward as a Flea can do. The Males therefore have abundantly that Power of Locomotion during their whole Life, which the Females want during a considerable Part of theirs; and this will give an easy Explanation of the Matter of their Generation, which has puzzled so many of the most eminent Writers. Some of these wondering how they got to the
Parts

Parts of the Tree, where they are found in their distended State, have supposed their Eggs to be imbibed with the Nourishment by the Roots, thence carried up to the Places where we find them, and there forced through the Bark; others have imagined them hatched there, but have wondered how they were impregnated. Mr. *Cestoni* thought them all Hermaphrodites, and that they impregnated themselves, and *de la Hire* and *Sedileau* supposed they copulated as soon as produced out of the Eggs. The Truth is, that they are hatched on the Tree on which they are afterwards found, and that they never leave it afterwards; they do not copulate till they are arrived at their State of Maturity, which is just before they begin to distend into the globular Form: A little before this they are impregnated by the Male Fly, and it is in consequence of this Impregnation that they afterwards swell up in that Manner; for their Encrease in Size, after this, is, as has been observed before, not so properly Growth as Distension. The Male or Fly is much smaller than the grown Female is, at the Time when she is to be impregnated; on closely watching the Trees loaded with Kermes in *March*, the little Flies will be seen hopping about among them, and walking over several of them, and at Times copulating with one or other of them, the Organ of Generation in them hanging down perpendicularly from the hinder Part of the Body, and being received on this Occasion into an Aperture near the hinder Extremity of the Female, which is afterwards wholly obliterated by the Distension of her Skin.

This Copulation happens at a time when the Kermes are not much observed, and it is beside of so odd a Kind, that a common Observer would never imagine it to be such, but would suppose the Males that he saw hopping about there, not to belong at all to the Females, but to be some little Flies that had accidentally alighted on the same Boughs. If we add to this Observation, that the young Kermes hatched in *June*, continue small and unregarded till the *March* following, at which Time they begin to swell, and after which they have very little the Appearance of any thing of the Animal Kind, we shall not wonder that they have been in general taken for vegetable Products, or a Sort of Gauls of the *Ilex*.

The *Ilex* or Holm Oak in general is of the Class of the *Arbores Glandiferae* of Ray. The particular Species of it, which affords the Kermes, is the *Quercus foliis ovatis dentato-spinosis* of Van Royen, the *Ilex Coccigera* and *Cocciglandifera* of Authors. It is a sturdy Shrub, but grows to no very great Height; the Bark is whitish or greyish; the Leaves are like those of the common Holly, and are in the same manner prickly about their Edges; they are of a pale or blueish green Colour, and remain green all the Winter. The Flowers are of two Kinds, Male and Female, both on the same Shrub: The male Flowers are a Kind of Catkins; the female ones are little single Cups as it were; these last are succeeded by moderately large Acorns, which stand in rough, and, as it were, prickly Husks.

The Shrub is frequent in *France*, *Spain*, and *Italy*, and in many of the Islands of the *Archipelago*. The Kermes is found affixed only to the very young Branches and the Leaves. The Creature lives by Suction, and it is in these tenderer Parts of the Tree that it is most easily able to get at the Juice. All the Insects of this Class approach nearly to the Nature of the Kermes, and if thoroughly enquired into, it is very possible others might be found of as much Value

value as this so long famous one. Dr. *Emeric* and his Associate *Garidelli* mention one Species very nearly approaching to the Nature of the Kermes, and which the Country People, used to collect the Kermes, observe also, and suppose to have some Connection with that very Insect, though erroneously. They call this the Mother of the Kermes Worm. The Eggs of this Species are whitish, and the Animals produced from them are also of a pale Colour, and variegated with silvery Spots.

Vallisnieri has also given us the History of another Species found on the *Ilex* about *Leghorn* by Mr. *Cestoni*. This greatly resembles the true Kermes, but it is of a black Colour, and when mature is full of a Juice not red but whitish, and of whitish Eggs. These however are neither of them properly to be called Kinds of Kermes. They are the Gallinsects of other Species.

The Kermes is a very valuable Commodity: It serves to two very great Uses, the Dyers in Scarlet finding it as valuable in their Way as the Physicians in theirs. The Kermes intended for the Dyers is best kept whole, only destroying the Principle of Life in the Eggs by means of Vinegar; but that intended for medicinal Purposes is more properly managed in another Way. The Kermes are to be gathered when fully distended, and while yet perfectly covered with their Bloom. They are to be immediately thrown into a Mortar and bruised to Pieces; after this they are to be set in a cool Place for seven or eight Hours, in which Time their Juice will be rendered much less tough and viscous than it was on the first bruising; after this it is to be pressed pretty strongly so as to get out the whole: The Liquor thus drawn is to be set by for some Hours, that the grosser Matter forced out with it in the pressing may settle from it. The clear Juice is then to be decanted off, and an equal Weight of fine Sugar is to be added to it, with which it is to be boiled over a very gentle Fire to the Consistence of a thick Syrup. This Syrup is called Kermes Juice in the Shops: It will keep a long time, and the Confection of *Alkermes* is usually made from it: But the Avarice of the People on the Spot usually prompts them to add a double Quantity of Sugar to the Juice; this wants little more than bare melting, to bring it to the Consistence required in what is called Kermes Juice in the Shops; but it is much poorer this Way than when the watery Parts have been evaporated, as in the right Process, and when the Quantity prepared from a Pound of this Juice is but a Pound and half; whereas in the latter Case, it is about twice that Quantity. There is however yet another Way of making it, in which a yet larger Quantity of Sugar is employed, and yet the Juice is much esteemed: This is the mixing three Pounds of Sugar to every Pint of the Juice, and setting the whole in a cool Place till thoroughly incorporated. This is esteemed preferable to either of the others by some People, who affirm, that a great deal of the volatile Part of the Kermes is lost in boiling up the Syrup in the other Processes.

The People who prepare Kermes for the Dyers, often let the Eggs hatch as they lie in drying, and then sprinkling them with strong Vinegar, they kill them and form them into a Sort of Cakes which keep very well a long Time.

A Pound of Kermes, distilled in a Retort, yield a very considerable Quantity of Phlegm, the first Runnings of which are without Smell or Taste, but the latter strongly empyreumatic; after this there rises no less a Quantity than six Drams of a volatile Salt in a solid Form, and a small Portion of a thin yellowish

yellowish Oil ; and after this a large Quantity of a coarser Oil as thick as Butter, this is of a reddish Colour, and empyreumatic Smell, and contains not the least Portion of an Acid in it. The Remainder in the Retort, however carefully lixiviated, does not yield the least Particle of any fix'd Salt.

The Antients were very well acquainted with the Kermes. *Dioscorides* has described it very particularly under the Name of *Coccus Baphica*. Though they were well acquainted with the Drug however, they knew but a small Part of its Virtues ; they accounted it an Astringent, and used it externally, ground with Vinegar, for Wounds, especially those in nervous Parts. The *Arabians* were the first who used it as a Cordial. *Mesue* recommends it in Palpitations of the Heart, and in low spiritedness. At present it is in great Esteem as a Restorative, and is said to strengthen the Stomach and assist Digestion, at the same Time that it invigorates and enlivens in an uncommon manner.

It is also in great Esteem among the Midwives as a Cordial, and Strengthner for lying-in-Women, and as a Preventer of Abortions. There are not wanting some among us, who incline to the antient Opinion, and allow Kermes no Virtue but that of an Astringent ; but this is not only contradicted by daily Experience, in which its Virtue as a Cordial is manifest, but the Analysis shews it must possess more active Virtues than these People pretend : Such a Quantity of a volatile Salt was not destined for a mere Astringent.

The Pigeons, in Countries where Kermes are frequent, are very fond of them, but they prove hurtful to them ; they throw them into a distempered State of Body, in which they void a great Quantity of thin Stools of a Blood red ; they sometimes also kill their young ones by feeding them with Kermes. It has been objected from this, that Kermes may be dangerous to the Human Species, but it rather appears, that these Birds eat immoderately of them, and by that means bring on these Injuries to themselves and their Young ; or were it otherwise, we know very well that things may be fatal to Birds, as Gentian, and many other Drugs are, and yet harmless in Regard to us.

'Tis true that *Paulli*, and *Rondeletius* before him, give us Instances of People thrown into Dysenteries by the too free Use of the *Confectio Alkermes* ; but this Mischief may, perhaps with much more Justice, be attributed to the *Lapis Lazuli* in that Composition, which is a Copper-Ore, and seems indeed a very improper Substance to be given internally.

CHAPTER II.

COCCINELLA, Cochineal.

COCHINEAL is a Drug in many Respects approaching to the Nature of Kermes, and though properly an Animal, it has, like the former, had the Fortune to be long accounted a vegetable Production. Cochineal, as we meet with it in the Shops, is a small Body of an irregular Figure : It is always however, oblong, convex on one Side, and compress'd or a little concave on the other ; it is mark'd with several transverse Furrows, like the Incisures on the Backs of the generality of Insects. It is very light, and of a friable Texture, easily crumbled to Pieces between the Fingers. Its Colour is
a dark

a dark purplish, almost black on the Surface, and a fine strong crimson within. Some of it is of a dusky grey on the Surface, with a Mixture of red in it, and this is generally found to be the very finest of all. It is brought to us from *Mexico*, where it is collected in very great Plenty.

Our Druggists distinguish two Kinds of Cochineal; the finer, which they call *Mesteque Cochineal*, and the coarser or less valuable, which is generally call'd the wild Cochineal: These are both the same Animal, and the only Difference is, that the *Mesteque* Kind has been taken thorough Care of, and supply'd with Food of a proper Kind; the other has lived in a wild State, and has fared worse. The wild Kind is found to be less cordial in its medicinal Capacity, and the Dyers observe, that it affords a much inferior Colour to the other.

It is not singular to this Drug, that it has been a great while in Use, and yet its Nature and Origin have been but little known till of late. We have many others, as has been before observed in different Parts of this Treatise, which have been long in common Use, yet which no Body has troubled himself to enquire into. Our Druggists study the outsides of the Bodies they deal in, not their History; and the Merchants who furnish them from abroad are seldom of a more inquisitive Temper as to these Particulars. It was in general known of this Drug, that it was collected in *Mexico*, at a certain Season of the Year, from a particular Plant; it was hence very natural to suppose it the Seed of that Plant, and accordingly it was long declared to be such. People who were clear-sighted enough to discover Marks of an Animal in it, were laugh'd out of Countenance; and *Pomet*, when he had procured two Accounts of it from that Part of the World, the one from the great *Plumier*, who declared it an Animal, the other from an ignorant Pretender, who called it a Seed, preferred the latter, and held the Author of the former in Contempt for telling him the Truth.

We have not yet had Opportunities sufficient to give us as full a History of this Insect as of the Kermes; the Distance of the Place, and jealous Nature of the People who gather it, render that difficult; we have discovered so much of it however, as to find, by expanding its Parts in Water and other Ways, and viewing it with the Assistance of a Microscope, that it is an Insect of an oblong or somewhat oval Figure, having six Legs and a Proboscis or Trunk at its Head destined for sucking the Juices of the Plant it lives on; that its Body is composed of several Rings or annular Parts like those of most other Insects, and that it has many other essential Parts of the Animals of this Class. *Lewenboeck*, so famous for many of his microscopical Observations, was a little unlucky on this Subject: Our Mr. *Boyle* desired to know of him what Cochineal was, and after many Observations he sent him Word, that he was confirmed in the Opinion that it was a Fruit like the *Uva Ursi*. When Mr. *Boyle* after this received Information from *America*, that the Cochineal was really an Animal, *Lewenboeck* was informed of this, and on more Examinations he retracted his former Error; but he changed it for one not much better, declaring that it was the hinder Part of some Animal, the Head and Legs of which had been taken away. Our *Petiver* was convinced of its being an Animal, and a Hexapode or six legged one; he knew that the Maggots of all the Beetle Kind, of which that little Animal we call the Lady Bird, or

Lady

Lady Cow is one, were Hexapodes, and he suspected the Cochineal immediately to be an Insect of this Class. He has gone so far as to give us Figures of it in all the three States it must have gone through on this Plan, and has figured it in the Worm and Chrysalis Condition, and finally in the Beetle State, in which he has given us the Representation of an Animal very like a Lady Bird, as the Creature in its perfect State. How low does a Disingenuity like this, set the Credit of such Naturalists!

The World has been sufficiently informed that Cochineal is an Animal, not the Seed of a Plant, by another very odd Accident. This has been the first Instance perhaps, and it will probably be the last of a Question in natural History being decided in a judicial Way: But the Dispute of two Persons not of the Naturalist Class, on the Subject of Cochineal being a Seed on the one hand, and an Animal on the other, were carried so far, that the Matter was determined by the Oaths of Persons on the Spot, regularly taken before a Magistrate. And we have such a Proof of Cochineal's being an Insect by this means, as we are never likely to have of any thing of a like Kind. We find by these Depositions, that it is an Insect of the viviparous Kind, and one of those that undergo no Changes, never appearing in any other than the Form we see it in, or should see it in, if it were not so much injured as it usually is in the Carriage. This sets aside the counterfeit History *Petiver* gives of it, and the Opinion of others that it is as he describes, from their finding little Beetles, &c. sometimes among it, is overthrown without even this Testimony, by observing that these Beetles are of various Kinds, and have nothing of the Nature, Qualities, or Virtues of Cochineal, but are merely Insects that have fallen among them by Chance in the drying.

Though we were thus perfectly informed however of Cochineal's being an Insect, and that of a Kind never changing its Figure, no Body ever found to what Class of Animals it belonged till *Reaumur* examined it.

This Author, after having established his Class of Gallinsects, Creatures that the least of all other Animals appear to be such, establishes a second Class of Animals nearly approaching to the former, but one Degree at least above them in their Approaches to the Characters of animal Life found in other living Creatures; these he calls Progallinsects. They pass a great Part of their Life fixed immoveably to some Part of a Plant as the Gallinsects do, but they never lose their Figure like those Creatures, but may at all Times be known for Animals.

Of this Class is the Cochineal, an Insect of such Consequence as an Article of Commerce, that it is not left to breed and propagate at random, but regular Care is taken of it, and the nicest Management applied to every Season and Circumstance of its Growth.

The Plant on which the Cochineal is naturally found, and on which the *Spaniards* raise it with so much Care, is described by all the botanical Writers under the Name of *Opuntia Major*. Sir *Hans Sloane*, who has given a Figure of it in his History of *Jamaica*, calls it *Opuntia maxima, folio oblongo rotundo majore, spiculis obtusis mollibus obsito, flore striis rubris variegato*. And *Dillenius* in the *Hortus Elthamensis* calls it *Tuna major mitior flore sanguineo Coccinellifera*. This Plant is composed wholly of what are called Leaves;

they are oval thick Bodies, joined End to End, and running into Ramifications by means of new ones which grow out sidewise. The Flower is moderately large; the Fruit resembles our Fig in Shape, it is full of a Crimson Juice, which tinges the Urine Crimson after eating it. It is evidently to this purple Juice, that the Cochineal Insects, which feed on this Plant, also owe their Colour, the very same Insects having been observed by *Plumier* on other Plants, and on all those without Colour.

The *Mexicans* plant the *Opuntia* all about their Habitations for the Sake of the Cochineal, which they propagate on it with great Care, and of which they make several Collections in the Year.

When the rainy Season approaches, they know their collecting Cochineal is over for that Year; they then take Care for the next Year's Store: And from their Caution in this Respect, we are in a great Measure let into the History of the Insect. The Rains they know would destroy many of them, and the succeeding Colds of the Winter more. They therefore at the Approach of this Season cut off the Pieces of the *Opuntia*, on which there are any considerable Number of the Cochineal Insects, which are not yet arrived at their full Growth; they carry these into their Habitations and there place them carefully out of the Way of Mischief of any Kind. The *Opuntia*, like the other succulent Plants, remains fresh a long Time after it is cut from the Root or Stem; the Pieces of it thus cut off remain juicy and succulent for the whole rainy Season, and at the End of this Time the Insects are found so well grown, that they are ready to bring forth their young.

The People now prepare for the multiplying these for the next Year's Crop; they make a little Kind of Nests in the Shape of Birds Nests, either of Moss, or of the thready Matter of their Coco Nuts or any other like Substance; into each of these Nests they put twelve or fourteen of the Insects, and they then carry them out and place them between the Leaves of the *Opuntias*, the Plantations of which they take Care to have at that Time in very good Order. The Thorns or Prickles of the *Opuntia* make these Nests easily fixed, and they in this manner people their whole Plantation in a few Days; though the Quantity is not small that they thus place on them; for these very Cochineals of the Nests make their first Crop, which is gathered not long after. They place generally two or three of these Nests, that is to say, they allow between thirty and forty Insects to the Jointing of every Leaf of the Plant to the next.

The free Air has such an Effect on these Insects, that within three or four Days after their being exposed to it, they bring forth their young in the Nest. Every Mother produces several thousands of these, which are at that Time as small as the minutest Mite. The young Insects leave the Nests after a little Time and run about the Plant, they soon after however fix themselves some on one Part, some on another of it; but they always choose the most succulent Parts, and those which are least exposed to the Wind. They remain fixed in the Place they choose, never stirring from it till they have acquired their full Growth, and are themselves ready to bring forth young. In all this Time they never erode the Leaves of the Plant, they only suck Part of its Juices by means of their Proboscis. In the colder Countries, where the Cochineal Insect is raised, they always cover with Matting for some time the
Plants

Plants on which they have placed the Nests, and where the young Insects are fixing themselves. The Descriptions we have been able to obtain of this Insect when full grown are not so particular as might be wished; but People who have seen it, say, that it is of an oblong, oval Figure, much like a common Bug that has sucked itself full, and is become rounded instead of the Flatness of its empty State; and they speak of its Legs, its Eyes, and the Trunk, with which it is armed at the Head, for the sucking in the Juices of the Plant.

So defenceless an Animal as the Cochineal in its fixed State, must needs be a Prey to a Number of other Creatures; there are Multitudes of Insects that feed on them; but the People who raise them are at infinite Pains to keep the Plants clear of all other Insects beside themselves. The Ants are very fond of being about them, but it is probable they do them no Harm. They are fond of being near our Gallinsects and Progalinsects, but they do not eat them; it is only for the Sake of the extravasated Juice of the Plants found near the Wounds they make in them. There are many Crops of Cochineal in a Year. The first is that of the Parent Animals placed in the Nests, this is a Gathering made very easily: The Creatures never leave the Nests they were placed in; when they have brought forth their young they die there, and there is no more Trouble necessary than the taking the Nests off the Plant, and shaking them out.

The second Gathering is of the Insects which had been brought forth by these, and have fixed themselves on the several Parts of the Plants as just mentioned.

This is about three Months after the former; in this time, a little more or less, according to the Favourableness or Badness of the Season, these young Insects have acquired their full Growth, and many of them are bringing forth their young: The *Indians* dislodge these from the Plants by means of a little Hair Pencil, tolerably stiff and fixed in a wooden Handle, brushing them off by this means, and catching them as they fall.

They are very careful, in this second Gathering, not to strip the Plants wholly of the Insects; they carefully leave a great many of the old ones, and they never disturb the young already produced by the others. The third Crop is furnished by these young ones, and those which are afterwards brought forth by the Parent Animals they leave there. This happens at about three Months End, at which Time these young ones are found to be full grown, and are gathered as the former, leaving a Store behind as in the former Gathering. Not long after this third Gathering of the Cochineal, the rainy Season usually comes on. The young Insects brought forth by those they leave on the Plants at the third Gathering, are what they find on the Leaves which they at this Time cut off and preserve, during the wet Season, in their Houses, to be placed in Nests on the Plants, as soon as this is over, and to furnish three or four successive Crops the ensuing Year.

They make a last Gathering at the Time when they cut off the Leaves for housing: They cut off only so many as they judge will be sufficient for the next Produce; but the rest of the Plant is also full of the Insects, and there are yet on it many of the old or Parent Animals which they left there on the third Gathering. The *Indians*, when they have housed what Quantity they like, make a Gathering of these: They are not at the Pains of dislodging them

singly with a Pencil as the others ; but they brush over the whole Plants in a careless manner, so that there fall off many Fragments of the Spines, &c. with the Cochineal, and this is mixed of the old Cochineal and the young of various Sizes : This is of much less Value than the other more carefully picked Cochineal. The *Spaniards* call this *Granilla*.

The Parent Animals of the former Gatherings would, if not prevented, live many Days after they were dislodged from the Plant, and would bring forth their young, which being very small and very nimble, would get away in great Quantity, and a great Part of the Weight of the Cochineal would be lost. To prevent this, the *Indians*, as soon as they have finished their Gathering, destroy the Creatures.

They have several Ways of killing them : Some do it by plunging the Basket in which they are, into boiling Water, and afterwards exposing it to the Sun to dry them. Others have a Sort of Ovens built in a coarse Way on purpose for this Occasion ; they put the Cochineal into these as soon as gathered, and give just such a Heat as is enough to kill them : These Ovens they call *Temescals*.

The *Indian* Women have also a Kind of flat Stones, under which they kindle a Fire, and then place on them their Cakes or Loaves of Maize Bread ; these they call *Comales*, and some use these to kill the Cochineal Insects in the same Manner.

The Difference in Colour of the Cochineal we receive is principally owing to the different Methods thus used to kill the Insects, and to the different Degree of Heat the *Indians* venture to give them. The Cochineal while living is usually covered with a cottony or downy Matter in the Manner of our Gallinsects. Those which are killed by means of hot Water lose a great Part of that Powder in the Operation. Those on the contrary which are killed in the *Temescals* or Ovens, retain this powdery Matter, and become of a greyish Colour mixed with Crimson ; and finally that which is dried on the *Comales* or baking Stones, runs a great Hazard of being burnt, and generally becomes blackish. The *Spaniards*, who are very nice in their Distinctions of the Cochineal, call that which has been killed in Water and lost its Greyness, *Renegrada* ; that which has been killed in the *Temescals*, they call, from its marbled Appearance, *Jaspeada*, and the last, which is generally over baked and blackish, *Negra*.

The dead Parent Animals of the first Crop of the Year, which they take out of the Nests they had put them in, lose much more of their Weight in drying, than any of the succeeding Crops ; four Pound Weight of these dry to one Pound ; of the others three Pound fresh generally affords a Pound dry.

The Fœcundation or Impregnation of the Cochineal Insect is the same with that of the Kermes, and of all the other Insects of the Gallinsect and Progallinsect Class. All the Creatures which we have been describing as fixed on the *Opuntia*, and as gathered for Cochineal are Females. The Males of the same Species are quite different Animals ; they are little Flies no way resembling the Cochineals, though produced by the same Mothers. The extreme Smallness of the young Cochineals prevents any Body's observing that some of them have Wings, or Rudiments at least of Wings at that Time ; and as they afterwards

afterwards grow up and appear so very different from the rest, they are supposed to be Creatures of another Kind accidentally fallen on the same Plants.

The People who take Care of the Cochineal, all agree in observing, that at the Time when that Insect is grown to its full Size, there are always seen on the same Plants a number of little wing'd Creatures, they call them little Butterflies; but it is easy for such incurious Observers to mistake a Fly with Wings not transparent, and those so large as to cover the whole Body; as is the Case in the Male Kermes Insect, for a Butterfly. These Flies are much smaller than the Cochineals, and are seen continually marching among, and walking over them; they all have a firm Belief, that these Flies make the Cochineals conceive, and indeed the whole is so analogous to what happens for the Impregnation of the Kermes, that there is not the least room to doubt, but that the *Indians* are in the right; and it is greatly to their Credit, that they made a Discovery in regard to that Insect, which was many Years wanting in *Europe*, as to the Kermes; though the Circumstances that led to the Discovery were the same in both Places.

However unlucky *Lewenboeck* was with his Microscopes on these Occasions, it is easy now to produce absolute Conviction, not only that the Cochineal is an Animal, but that it is a viviparous Animal, by means of them. One may at any Time, by carefully soaking a large Cochineal in warm Water, see not only Legs, and Head, and Proboscis, but on gently pressing it one may force out of its Body a number of red Granules, which, when closely examined, prove to be Embryos or Fœtus's, with the Rings of the Back, and several other Parts of the Body very distinct. This may be seen in the pick'd Specimens of the finer Mesteque Cochineal; but it is vastly better observed in some of the larger Specimens, picked from among the wild Cochineal as it is call'd, though we have almost lost the Distinction. The wild Cochineal is a Mixture of small and large Grains, and the largest of these seldom fail to shew the Embryos just mentioned, if properly treated for the Observation.

The Quantity of Cochineal brought annually into *Europe* is immense. People who have been at the Pains to take the Account say, that it is no less than eight or nine hundred thousand Weight. Mr. *Neufville* observes, that the *Spanish* Flota brings, at every Return to *Europe*, between two and three thousand Serons of Cochineal, each Seron containing from a hundred and thirty to two hundred Pounds Weight; that the Vessels which precede the Flota are charg'd with from seven to fourteen hundred Serons each; that the *English* Assiento Company import a large Quantity, though no Body justly can say how much; and that other Ships from the same Part of the World are occasionally loaded with large Quantities of it. Upon the whole, the most moderate Computation that can be made, he says, is, that four thousand four hundred Serons of Cochineal are annually imported: Allow these at two hundred Weight each to make amends for the many Serons not taken into the Account, and it amounts to between eight and nine hundred thousand Weight annually imported. At a moderate Computation there are four thousand and eighty of these Insects go to the Ounce, and consequently sixty-five thousand, two hundred and eighty to the Pound: What an immense Number then is it that is collected of these little Creatures every Year?

It is a very singular Circumstance attending Cochineal, that it is not liable to decay. People who have made Collections of Insects, know very well how difficult a thing it is to preserve them, let whatever Art be employ'd. Other lesser Insects get into their Bodies and eat them to Pieces. On the other hand Cochineal preserved in a Box, with no particular Care at all, will keep ever so long unhurt; and after ever so great a Time is as good, as fit for all Purposes, either of Dying or of Medicine, as at first.

Mr. *Neufville*, before mentioned, procured some Cochineal which had, by all Accounts, remained in the Store-House whence he had it, a hundred and thirty Years, and which was then perfectly good. And Mr. *Marchand* of *Paris* produced before the Academy some Cochineal, put up by his Father in a Box, the Date on which shew'd, that it was sixty Years before, and which was as good as any Cochineal of the last Year.

Cochineal was wholly unknown to the Antients. The *Spaniards* gave it the Name *Cochenilla*; and it has been call'd by many, who supposed it a Seed, *Eici Indici Grana*, and *Grana Opuntiae*. *Petiver*, who pretended to have made great Discoveries in its History, and whose Character will suffer greatly by that Pretence, calls it *Scarabeolus hemisphaericus Cochinelifer*.

Cochineal possesses much the same Virtues with Kermes; it is esteem'd a great Cordial, Sudorific, Alexipharmic, and Febrifuge. There are not wanting some who make it singly a Remedy for Fevers of whatever Kind, the malignant ones not excepted; but this is carrying its Praise a great deal too far. *Hernandez* tells us, that the *Indians* use it as an Astringent, mixing it in Powder with strong Vinegar. It is greatly used by the Painters and Dyers, the high crimson Colour it affords being scarce equal'd by any thing, and making according to their different Management of it all the Degrees and Kinds of red.

CHAPTER III.

CANTHARIDES, *Spanish Flies.*

THE *Cantharides*, though usually call'd Flies with us, are properly of the Scarabus or Beetle Kind, having hard and firm external Wings over the fine flexible filmy ones, which are of principal Use to it in flying. It however so much approaches to the nature of the Fly Kind, that its Elytra or external Wings are softer and more flexible than those of the generality of Beetles. It is one of the Class of the *Coleopteræ* of *Linnaeus*, of the *Insecta alata vagini pennia* of *Ray*, and other Authors.

The Creature is usually about half an Inch in Length, and a third of an Inch or somewhat less in Breadth. It is of a fine shining and very beautiful Colour, on the upper Side a bright green, with a Mixture or Shade of gold yellow; on the under Side it is brown. Its Head is small, and has two Antennæ of a moderate Length, very thin, and moveable with great Ease: Its Breast is flattish, and its Sides somewhat wrinkled, and beset with a kind of Protuberances.

From the Eggs of the Parent *Cantharis*, are hatched a small kind of Worms, of a dusky whitish brown Colour, with darker Heads, and with six Legs; and from

- * Lister recommends it particularly in the confluent small Pox.
- ✓ The Method of extracting the colorific matter is by boiling of it in a solution of fixed Alkali salt, or infusing it in a solution of Volatile Alkali, & then precipitating it by addition of any Acid - Carmine & Lake are only this or other such colorific matter precipitated with some kind of White Earth, &c serves as a basis to the Tinging Particle.
- Institutes of Chemistry Vol. 1. p. 410.

The ill Effects of Cantharides are a Strangury, w^{ch} is best taken off by Oyl & Camphire
& Willis mentions a Dysentery, being brought on by them.

Baglivi condemns y^e Use of Blisters in Phrenops. & I think they should be used wth Caution
whenever there is a hard strong Pulse.

But in those fevers where y^e Pulse is languid, & somatous or Lethargic Symptoms appear
or whenever there is a Retrocession of any Eruptive Disorder, they are of Signal
Service.

D^r. Graenvelt was put into Newgate by the Order of the College of Physicians for giving them
internally.

Memorat D^r. Graenvelt Doctorem Romine Bernard duos Pulveres. Dominica. undam prescripisse
unum ex Scrupulo Pulv. i. Chel. Cancrorum, alterum ex Cantharidibus (proposito modo pulverat)
ad gr^{os} xx vel xxx ad acuendum Vesicatorium, Natus per Imprudentiam conservat
Pulverem i. Chel. supra Emplastrum Vesicatorium, & intra apumendum dederat Cantharides
Quo facto Agrotus patiebatur Diutius frequenter & in collo Vesicae Dolores acerbos.
Ope potionum Lactearum, & Emulsionum Agrotus fuit curatus; Vid. Graenvelt de Usa interna
Si Emplastrum Vesicatorium in globulum redactum fasciulo imponitur, Carnis Excrecentia
tollitur & fluxus Ichoris promovetur.

Cantharides in Spirit forms a Tincture which will blister by repeated Embrocations, &
equal or greater force than the Substance of the fly itself -
a Decoction of them in Water has the same Effects - Theory of Chir. Pharmacy.
There are Instances where Paralytic Limbs have been restored to p^{ar} 89.
sense & power of motion by the use of the Tincture, after all other known
means have been tried in vain. ibid -

from these Worms are afterwards produced the *Cantharides*, as the Butterflies are from the Caterpillars.

They are very frequent in *France*, *Spain*, and *Italy*, in all which Places they are collected in great abundance from the Bushes and Plants; and after suspending them over the Fume of Vinegar for a little Time, they are exposed to the Sun to dry, and are then sold to the Druggists.

Cantharides, distill'd in a Retort, yield first a limpid Liquor of a saline and pungent Taste; after this a second Liquor of a brownish Colour, extremely acid and pungent; and after this an empyreumatic Liquor, of so violently acrid a Taste, that the least Drop of it can scarce be born upon the Tongue; after this there rises a moderate Quantity of a volatile Salt; and finally a small Portion of a very fetid black Oil.

The principal Use of *Cantharides* at this Time is external in the making of Blisters. We have several *English* Insects of the same Kind, which answer the same Purpose, but they could not easily be collected in sufficient Quantity. Beside this external Use, there have been, at different Times, People who have been very free with them internally. Our *Groenveldt* suffered very severely for the attempting to make their Use general, but we at this Time retain a Tincture of them in the Shops, and People, who are sufficiently upon their Guard in the Use of it, find it an admirable Medicine. It is diuretic and emmenagoguee and has been even given in the Gout with Success.

The volatile Salt of *Cantharides* has been greatly recommended by many People, but the Tincture is the only Preparation now in Use.

TINCTURA CANTHARIDUM,

Tincture of Cantharides.

Take of Cantharides bruised two Drams, of Cochineal half a Dram, of Proof Spirit a Pint and a half, digest them together two Days in a Sand-heat, then filter the Tincture for Use.

A much more powerful Tincture than this may be made with the Addition of an Acid, and may be used by a prudent Person with perfect Safety.

Take Proof Spirit two Ounces, Oil of Vitriol two Drams, mix these together, and put into the mix'd Liquor two Drams of Cantharides bruised; let these stand in Digestion twelve Hours, then add eight Ounces more of Proof Spirit, and shaking the whole together, set it in a Sand-heat for two Days; the Spirit will in this Time acquire a pale yellow Colour, and is to be filter'd off for Use. A few Drops of this are to be first given, and the Dose daily increased till they are just felt on making Water; the Dose is then to be reduced a little, and on continuing it thus, just below the Degree in which it would do Mischief, the greatest Effects are to be expected from it.

CHAPTER IV.

HIPPOCAMPUS,

The Sea-Horse.

THIS is a little Animal kept entire in our Druggists Shops, though at this Time rather as a Matter of Ornament or Curiosity, than of real Use. It has been disputed by many, to what Class of Animals it really belonged; but the

the Height which natural Knowledge has of late arrived at, has settled that Point.

It is a Fish, though of a very singular Form as we see it dry'd, and is of the *Syngnathus*, or *Acus*, the Needlefish Kind. *Artedi* describes it under the Name of *Syngnathus Corpore quadrangulo pinna Caudæ Carens*, the square Needlefish with no Tail Fin. *Ælian*, *Bellonius*, *Ray*, and the other Ichthyologists in general, have call'd it *Hippocampus*; and the *Italians* at this Time call it *Cavallo Marino*, and *Zidrach*.

It is about four or five Inches in Length, and nearly half an Inch in Diameter in the broadest Part: Its Colour, in the dry'd State in which we see it, is a deep reddish brown; and its Tail is curl'd, or turn'd round under the Belly.

Its Head is long and narrow, somewhat depressed, and of a bony Structure: Its Mouth very small, and placed at the Extremity of the Jaws, which are all the way up from this fastened together, so as to give the Appearance of a long and narrow Snout: The lower Jaw is a little longer than the upper, and is moveable; it turns upwards at the End, and seems to form a Cover for the Mouth: Its Eyes are very small, placed in the hinder Part of the Head, and their Iris is yellow: The Nostrils are two little Apertures, situated in the upper Part of the Head near the Eyes: The Membrane which covers the Gills is very small, but has two very slender Bones in it. The whole Body is covered with a sort of striated Laminæ, or Plates of a tolerably firm Texture. There is no visible Side Line on it, but on the Head behind the Eyes there is on each Side a little prickly Eminence, and three others in the hinder Part of the Head near the Apertures of the Gills. The Shape of the Body from the Head to the *Anus* appears at first Sight square, but the four Planes are unequal in Extent, the lower one being much the broadest, and the upper one narrowest; there are on the lower Plane three little Risings which divide it into four Parts, so that on a nice Inspection the Body appears heptagonal, or composed of seven Planes instead of four. The Beginning of the Back is somewhat sharp, and the Aperture of the *Anus* is placed nearer the Tail than the Extremity of the Head, which is not the Case in the other Species of this Genus of Fish: From the *Anus* to the Extremity of the back Fin the Body is hexangular, and from thence, a little way downward, it is square or tetragonal; then it is pentangular for a little way more, and thence square to the End: The Breadth and Height often varying in this little Compass. The Body, from the End of the back Fin to the Extremity is very small. The Laminæ between the Head and the *Anus* are seventeen in number; those between the *Anus* and the Extremity of the Body are about forty five, but the hinder ones are so very small, that it is difficult to count them exactly. The Extremity of the Body is sharp, and has no Appearance of ever having had a Fin on it by way of Tail, though all the other Species of the *Acus* have one.

The Spine is long and firm, and the Vertebræ are long. It is found about the Shores of the *Mediterranean* in several Places. There are also two other Species found in the same Places, and sometimes sent over under this Name.

It has been celebrated for many Virtues, but is at present wholly neglected.

CHAPTER V.

MILLEPEDES,

Wood-Lice.

THE *Millepes*, or Wood-Louse, is a small Insect of an oblong Figure: Its Length is about half an Inch or less, its Breadth about a fifth of an Inch: Its Colour is a dark bluish or livid grey: Its Back is convex or rounded; its Belly more flat and of a paler Colour: It is mark'd with a great number of circular Indentings from the Head to the opposite Extremity; it is a very swift Runner, but it can occasionally roll itself up into the Form of a Ball, which it frequently does, and suffers itself to be taken when it might have escaped by running. Its Antennæ are short; its Legs are also short but numerous, it has fourteen Pair of them, these however are not enough to entitle it fairly to the Appellation of *Millepes* or *thousand Feet*, especially when the Authors who gave it ought to have known that there were two other Genera of Animals, every Species of which had a much better Title to such a Name; these are the *Scorpندرæ* and *Juli*, the former of which have at least an hundred Pair, and the latter often a hundred and twenty. The *Millepes*, or as it is much more properly call'd by others, *Oniscus*, is of the same Class with these two Animals, it is one of the *Aptera* of *Linnaeus*, and of the *Insecta Pedata non alata* of *Ray*. They are found in great Plenty with us, and that generally under old Logs of Wood, or large Stones, or between the Bark and the Wood of decay'd Trees; they are a very favourite Morfel with many of the larger Animals, and if Nature had not instructed them to live in this concealed manner, the whole Race of them would soon have been extinct.

Millepedes, chemically analysed, yield first a large Quantity of Phlegm, limpid and colourless, but of a saline Taste; after this comes over a smaller Quantity of a somewhat turbid Liquor, tasting much more saline and pungent; after this a very small Portion of an empyreumatic Liquor, of a brownish Colour, and a strongly alkaline Taste; and finally, a moderate Quantity of a volatile Salt in a concreted Form, with some Oil very fetid, and of a blackish Colour.

The volatile Salt has been sometimes kept in the Shops as a Medicine, and the pungent Liquor, which is a Phlegm with some of this Salt dissolved in it, under the Name of the Spirit of *Millepedes*; nor have there been wanting some to attribute Virtues to the Oil; at present however these Preparations are all laid aside. We sometimes give the Animals dry'd and reduced to Powder, but in this State they lose the greater Part of their Virtues. The best way of taking them is the swallowing them alive, this is very easily and conveniently done, for they naturally roll themselves up on being touch'd, and thus form a sort of smooth Pill, which easily slips down the Throat untasted, and they are immediately destroyed on falling into the Stomach. This is the securest Way of having all their Virtues; the next to this is the bruising them with Wine and taking the Expression. If the Patient can be prevailed with to take them no other Way but in Powder, the best Method ever invented of preparing them for that Form, is that ordered in the new *London Dispensatory*; which is

the tying them up in a thin Canvas Cloth, and fufpending them within a cover'd Veffel, over the Steam of hot Spirit of Wine; they are foon killed by this Vapour and rendered friable.

Millepedes are aperient, attenuant, and detergent; they diffolve viscus Humours, are good in all Obftructions of the Vifcera, and have even been celebrated by fome Writers as a Remedy for the Stone, which it is pretended they have a Power of reducing to a Mucilage, and carrying off; but this is of the Number of thofe Praifes of Medicines which redound very little to the Praise of thofe who give them. They are often found to be of Service in Afthmas, and great Good has been fometimes done by a long Courfe of them in Diforders of the Eyes.

A N I M A L S

Ufed in MEDICINE entire.

C L A S S the S E C O N D.

R E P T I L E S.

Of thefe we have only two.

1. The VIPER.
2. The SKINK.

C H A P T E R I.

VIPERA,
The Viper.

THE Viper is by far the moft noxious Animal of the Serpent Kind that our Part of the World affords, and it is as much the moft ufeful in Medicine; indeed ballancing the Good we may receive from it, and the Mifchief known to have been done by it, it feems much more our Intereft that there fhould, than that there fhould not be fuch a Creature among us.

The Viper is a Kind of Serpent, ufually between two and three Feet in Length when at its full Growth, and about an Inch, or ufually lefs, in Thicknefs. The Colour in the Male is generally more brown and dusky than in the Female; but in both there runs down the whole Back, from the Head to the Tail, an undulated and broad black Line; this is properly a Chain of black Spots, of a rhomboidal Figure, inferted into each other at the Ends; and
black

& glands.

by their prominent Angles, and the Depressions between, forming the indented Line that terminates the Edge of the Row of Figures sideways. A little below this broad Line there is on each Side a Series of black Spots, disposed regularly along; and below these near the Belly, there is on each Side a Line of small whitish Spots, and another of larger and blackish ones; and finally under this there is still another Row of small white Spots. The Belly is cover'd with long and narrow black Scales placed transversely: The Tail is not so long as in many other Serpents; it is not carried to more than a fifth Part of the Length of the Body beyond the *Anus*, and it terminates in an extremely sharp Point. This Smallness of the Tail is one of the most obvious Characters of the Viper; the Colours are not perfectly certain or regular; the Belly indeed in all Vipers is black, and the Distribution of the Lines and Spots, where they are any thing distinct, is always as just mentioned; but the intermediate Colour of the Body, which may be call'd the general Colour, is very variable; in some it is of a pale brown, in some Iron Colour, in some it has a faint Cast of yellow, in some of green, and in others of a pale whitish. Some Vipers have the general Colour so near that of the Variegations, that they are scarce distinguishable; and there have some been met with absolutely black, but these are more rare. The Poison of the Viper is situated solely in its Mouth, in which, beside the common Rows of Teeth, each Viper, as well Male as Female, has on each Side a Phang or long Dens Caninus, which is hollow'd at the Base; and has about the Root a Bag of poisonous Liquor, secreted from a peculiar Gland destin'd to that Purpose, and opening by a Duct into the Bottom of the Bag. When the Creature inflicts a Wound it is with these long Teeth, and there is always discharged into it a Quantity of the poisonous Juice, secreted for that Purpose in the Bag just mentioned. The Eyes of the Viper are small, and its Tongue forked; it darts this out with great Violence when provoked.

The Viper is of the Number of viviparous Serpents, according to the common Distinction, not laying its Eggs in a Dung-hill or other warm Place as the common Serpent, and most others do, but retaining them in its Body till hatched, and excluding the living young ones. Its Food is principally of the animal Kind: There are Authors who talk of its eating Herbs, but on dissecting Vipers, there are generally found in their Stomach the Wings of Beetles, the Leg-bones of Mice, and sometimes whole Mice, Frogs, and other Animals of the like Size; which considering the natural Smallness, not only of the Throat, but of the whole Neck of the Viper, it is amazing to conceive in what manner it gets down. The Method indeed is by Suction, and is very slow, the Creature's Body being drawn out into the utmost possible Thinness, and the Viper's Neck distending gradually at the same Time, till between both it is managed. What greatly facilitates this to the Viper, and to all the Serpent Kind, for it is common to them all, is, that there is no Danger of Suffocation for want of Breath from it, though the whole Cavity of the Throat be fill'd up; for tho' these Creatures have Lungs, and Respiration, yet it is not of the Nature of ours, or of that of Quadrupeds; they are not under a Necessity of taking in and discharging a Quantity of Air, at quick Intervals, as we are, but what they have once taken in they retain a long Time, so that they are under no

Necessity of breathing during this long Operation, which is therefore not painful to them, as we might naturally imagine, but pleasant.

It is not easy to see the Viper thus employed, because after taken, it will scarce be brought to eat at all; we have indeed no Instance of any thing of the Serpent Kind eating while in confinement, except a female Viper big with young; and if possessed of such a one, it may be possible to be a Witness to it, and to the strange Terror of any little Animal proper for its preying on, on being thrown into its way. Whoever has an Opportunity of throwing a Mouse to a Viper in this Condition, will see how much Foundation there is for the Stories of the Rattle-Snake and other Serpents enchanting, as it is called, the Creatures they are to prey upon, into their Mouths.

The Viper is common in *England*, but much more so in the warmer Countries, and there more mischievous. We may find Vipers in the Heat of the Day on the dry Banks under Hedges exposed to the Sun, and in Places not too much frequented almost at any Time in the hotter Months: In Winter they retire into Holes, and lie torpid the whole cold Season. However mischievous the Bite of the Viper is, its Flesh is safe and wholesome; indeed there is no Part of it that will do any Harm, except the Poison lodged in the Wound made by the Bite. This very Poison separated from the Bag, diluted with any Liquor and swallowed, not being capable of producing any bad Consequence.

The Bite is attended with very terrible Symptoms, and in the hotter Countries is often fatal; with us many have escaped with Life, without the Assistance of Medicines, some in Spite of bad Management: We have lately had the famous Remedy of the People who trade in them, and must be often bit by them, explained to us. It is no more than common Oil, which is to be rubbed on the wounded Part over some hot Coals, and repeated occasionally. With the Assistance of this, we have seen People escape after very terrible Symptoms, such as perhaps we have not had an Opportunity of seeing any Body under, who did not use the same means for Relief. Other more painful Methods have been prescribed, but they are now wholly out of Use. These were the making strong Ligatures on the Limb above the Wound, then scarifying and burning it with a hot Iron, or making a large Incision, filling it with Gunpowder, and setting this on Fire.

Vipers are best taken for medicinal Use in the Months of *July* and *August*; they are then most vigorous and fattest: Though those which are taken in Spring, as soon as they come out of their Winter's torpid State, are always found to be in very good Case: They are best for Use when first taken, but the People who sell them will never tell the Truth on this Head. They keep them alive in large Chests, in which they will live a Year or more without eating any thing.

Vipers are to be chosen large and vigorous: If intended for Use while fresh, they should be killed immediately before the Time, for their Flesh corrupts very soon: If for drying, they should be killed at home, and after skinning, hung up. Those who buy them ready dried, often have common Snakes instead of Vipers, and frequently such as have died of themselves in the Confinement.

Vipers, distilled in a Retort, yield first a moderate Quantity of a limpid Phlegm, insipid, and with very little Smell; after this come over a Phlegm loaded

loaded with volatile Salt, and a small Quantity of a black and extremely fetid Oil; a large Quantity of a volatile Salt in the mean time concreting and fixing itself in a dry Form to the Sides of the Receiver.

The Ancients were very well acquainted with the Viper; they called it *Echis* and *Echidna*; they had many fanciful and foolish Stories about it, one of which was, that the young ones always destroyed the Parent Animal by gnawing their Way out of her Body, and this is believed by many to this Day, though without the least Foundation in Truth. They imagined also that it fed on Scorpions, Cantharides, and other fatal and poisonous Animals, and that by that means its own Poison became so terribly fatal.

Many of the Ancients, notwithstanding all the Mischief they dreaded from the Viper, esteemed it sacred, and on Medals its Image is frequently used as a Symbol of divine Power. And in the *East Indies*, Princes have erected Buildings for their Entertainment, and have made it a capital Crime to kill them.

It is so certain that the Poison of the Viper is wholly in the yellowish Fluid lodged at the Base of the Tooth, that when that has been taken away, Creatures have been bitten by the Viper, and suffered no Harm by it: The Poison of this Bag is separated from the Blood by a conglomerated Gland, lying in the lateral anterior Part of the *Os Sincipitis* behind the Orbit of the Eye, from which Gland there is a Duct which conveys it into the Bag at the Root of the Teeth. The Teeth are hollowed in their lower Part for the Reception of this Poison, and the Cavity is extended upwards for the Conveyance of it, though not to the very Top as some have supposed. It terminates in a long and narrow Slit below the Point, out of which the Poison is emitted into the Wound. *Galen* tells us of People who would stop up the Apertures of the Teeth with a Kind of Paste, and then suffer themselves to be bit by the Creature and receive no Harm from it: But it is much more likely that they imposed on People, and were bitten by other Serpents that had no Poison at all. The poisonous Liquor taken from the Bag and examined by the Microscope, appears to be composed of minute *Spiculæ* or Darts resembling the Threads of a Spider's Web, but much finer. Mixed with Syrup of Violets, it turns it reddish, so that it is evidently an Acid, not as many had supposed, an Alkali. It is amazing that so small a Quantity as is received of this Poison into the Blood should be capable of producing such wonderful and terrible Effects.

A violent Pain is first felt about the Wound, then a Swelling, red at first, but soon after livid, extending itself very quick to the other Parts, then Faintness, a quick, low, and often uninterrupted Pulse, convulsive Vomiting of bilious Matter, cold Sweats, and if Death does not succeed these, the Swelling continues some time, the Wound becomes a foul Ulcer, and the Skin is usually discoloured for a long while after.

The Ancients knew well enough the Nature of the Viper, to be convinced that its Flesh was not poisonous; they eat Vipers and esteemed them, as they truly are, nutritive, restorative, and cordial. The best Way of feeding on Vipers, is to cut them into Pieces and boil them in Chicken Broth; they give it no disagreeable Taste, though they communicate to it all their restorative Virtues.

Dried

Dried and powdered they are given twenty or thirty Grains for a Dose ; but this way they lose the greater Part of their Virtues. The volatile Salt is a noble Sudorific. Its Dose is from three to eight or ten Grains. The Oil is recommended to discuss Tumors, and to be held to the Nose of People in hysseric Fits ; but it is so very fetid, that it is now wholly out of Use.

CHAPTER IV.

SCINCUS,

The Skink.

THE Skink is a Kind of small Lizard brought to us dried, with the Guts and other Intrails taken out, and usually with the small End of the Tail cut off. It is about five or six Inches long, and of the Thickness of a Man's Thumb. Its Colour is a pale brown, somewhat bright, and with a Cast of greyish in it on the Back ; the Belly is more grey. It is covered with very small Scales. Its Legs are moderately long in Proportion to its Size, being often three Quarters of an Inch from the Top to the Toes. They are terminated by five of these, which are as it were alated, and somewhat resemble those of the Monkey Kind. Its Tail is round ; the Head is long, and terminates in a sharp Snout ; the Eyes are very small ; the Mouth very large, opening a great Way up, and furnished with numerous small Teeth. The Scales of the Head are longer and larger than those of the Body.

It is an amphibious Animal, and has therefore been described by different Authors, under Names, some expressing its living on Land, some in the Water. The Generality of medical Writers call it *Scincus Marinus*, the Sea-Skink. But Ray describes it under the Name of the *Crocodilus terrestris*, the little land Crocodile, as do also *Gesner* and some others. It is caught in the Banks and of the Nile, and elsewhere in *Ægypt*, and should be chosen large, found, and fresh. They are very apt to breed Worms, in which Case they are of no Value.

Skinks, distilled in a Retort, yield first a small Quantity of a limpid Phlegm, of a faintish Smell, and insipid to the Taste ; after this comes over a reddish or brownish Liquor, impregnated with a volatile Salt ; and after this a brown Oil of a very fetid Smell : A Quantity of volatile Salt in a dry Form, in the mean Time affixes itself to the Sides of the Receiver. This is of a pungent Smell, and in all Respects greatly resembles Salt of Vipers, but that it is not so white. There is much less of this afforded by the Skink than by the Viper, but much more Oil.

None of these Preparations of the Skink are in Use, but the dried Animal is greatly recommended as possessing the Virtues of the Viper's Flesh, but in a more exalted Degree. It is said to do Wonders as a Restorative, and Provocative to Venery : For this last Purpose, the Belly is preferred to any other Part of it ; but there does not appear to be any Reason for this in the dried Animal, nor indeed any great Proof of such Virtues as are ascribed to it. The People of *Ægypt* cut the Flesh to Pieces, and boil it down to a strong Broth or Jelly ; they speak much of its Virtues on this Occasion, given in this Form ; and it is indeed very possible, that it may do something taken

in this Manner, though it fails with us, as we find the fresh Flesh of the Viper very much superior to the dried.

The Skink is an Ingredient in some of the old Compositions, and it is owing to that only that it is at present to be met with in our Shops.

PARTS of ANIMALS

Used in MEDICINE.

CLASS the FIRST.

H O O F S.

OF this Class we have only one Substance now in Use, which is the Elks Hoof, or, as it is vulgarly but very improperly called, the Elks Claw.

CHAPTER I.

UNGULA ALCES,
Elks Hoof.

THE Elks Hoof kept in the Shops for medicinal Purposes is usually that of the left hinder Foot, that being supposed to have the Virtues against Epilepsies, for which it is famous, and not any of the others. It is a cloven Hoof, moderately large, and of a shining black Colour, very hard and considerably heavy. The Druggists generally take Care to have a Part of the Leg of the Animal with it, to shew that it is truly the Foot of the Elk, not of some other Animal of that Kind, and that it is the Hoof of the peculiar Foot that is imagined to possess all the Virtue. With all this pretended Exactness however, if we look into the Shops, we shall find under the Name of *Ungula Alces*, some Feet that have belonged to Animals, not killed quite so far off as the Countries the Elk inhabits.

The Elks Hoof, that is truly such, is brought from the cold Countries, *Muscovy*, *Lithuania*, and *Scandinavia*. Care is to be taken in the Choice that it is not worm-eaten or decayed, which sometimes happens, especially when too large a Portion of the Leg has been left on with the Hoof and that not carefully dried.

The Creature to which this Hoof belongs is a very large and stately Animal of the Stag Kind. It is of the Size of a small Horse. Its Colour is greyish like that of a Camel. It has been called from its extraordinary Size by many Writers, *Animal magnum*. It has been disputed by many, whether it be
the

the same Creature that *Cæsar* in his Commentaries, and that *Pliny*, *Polybius*, *Pausanias*, and *Strabo* mention under the same Name. It must be acknowledged that there are many Particulars in the Description these Authors have left us of the *Alce* that can by no means be made to agree with the Creature we now call by that Name; but it is also to be acknowledged that in these very Particulars, the several Authors do not agree with one another. The Particulars in which they all agree may naturally be supposed the true Characters of the Animal; and these all without Exception agree with our Elk. As to the rest, it is most probable, that there have been Mistakes in the Accounts the Authors received, and that they ought not to weigh any thing against an Opinion countenanced by every thing that carries any Appearance of Certainty in regard to the Creature. We are to observe that the Ancients might very naturally be led into Errors about the Elk, as it was an Animal that inhabited Countries with which they had very little Commerce; and *Pausanias*, one of the Authors who has helped the contradictory Accounts, acknowledges how little his own, or any of the others, are to be depended on, when he tells us, that of all Animals in the World the *Alce* is the least known to Men, as it never lets them come near it, its excellent Nose scenting them at a great Distance, and its timorous Disposition prompting it to fly as fast as possible from them. Be the Reason what it will, 'tis evident that the Authors who have described it, have all done it very ill, and very inconsistently one with another. Some say its Coat is of different Colours, as in the Stag Kind; some all of one Colour; some say it always has Horns, some that it never has any; some affirm that it has no Joints in its Legs, and can therefore neither rise nor stoop, so that it never lies down to sleep but rests against a Tree, and that the common way of taking it was by sawing the Tree, it uses for this Purpose, almost through; but others apply all this to other Animals. All these Contrarieties in the Descriptions of the *Alce* of the Ancients, do not amount to a Proof that they did not mean our Elk by that Name; they are rather all reconcilable to it, and shew, not that the Authors of them meant different Animals, but that they received imperfect Accounts from People of it. The Account *Cæsar* gives of their Coat being of different Colours, may be easily reconciled to the Elk, which, though always throughout of the same Colour at the same Time, yet changes the Colour of its whole Coat in Summer, to a much paler than it is in Winter. *Cæsar* might be told of the Elk's being of two different Colours, by those who had seen it both in Summer and Winter, and might naturally enough misunderstand it, so far as to suppose that it was mottled with two Colours at once.

Cæsar tells us, that the Elk has no Horns; and *Pausanias* affirms, that it has, and describes the particular Structure of them; this has led People to suppose, that *Cæsar* and *Pausanias* must mean two different Animals; but the People who suppose this are wrong, every one knows that the Male of the Stag Kind have all Horns, and the Females are all without them; it only appears therefore, that *Pausanias* gives an Account of a Male Elk, and *Cæsar* of a Female one. As to the Opinion of their having no Joints in their Legs, the modern Travellers have said the same thing of the Elks of *Muscovy*, as well as *Cæsar*, and the rest of their *Alce*. The Opinion has got Footing from the manner of their travelling on the Ice, but it is a very erroneous and absurd one, as well in the

the antient as in the modern Assertors of it. It is objected, that *Pliny* makes the Alce an Animal with a single or undivided Hoof like a Horse, but we need not wonder any more at this Blunder in *Pliny*, than at *Erasmus*, *Stella*, and *Sigismund*'s affirming the same thing of the Creature which we know to be our Elk. In much later Days, *Menabene* and *Caius* tell us also, that the Elk has a Beard like a Goat, and that the rest of its Hair is not longer than that of a Horse. All these are false Accounts, yet we know very well, that all these Authors meant the very same Creature that we call the Elk, in the Descriptions in which they have inserted them; in short, natural History has, till of late, been so very little regarded, as to its proper and necessary Accuracy, that if we would suppose every Description, in which there is some repugnant Circumstance to signify, for that Reason, a different Animal from that usually understood by the Name it belongs to, we must vastly encrease the number of Species, though with no great Foundation.

The Account *Polybius* gives of a Piece of Flesh under the Elk's Chin, and that of *Gesner* of the length of Hair upon its Neck, are neither found in the Animal, nor mentioned by any other Authors, and are therefore to be both given up as entirely erroneous. On the other hand, among the many Particulars in which all the Antients agree in their Accounts of the Alce, there is not one that does not properly belong to our Elk. They all agree that the Creature is of the Stag Kind; that its Ears, its short Tail, and its Horns in the Male, agree with those of the Stag Kind; and they all agree that it differs from the Stag in the Length and Colour of its Hair, in the Size of its upper Lip, in the Smallness of its Neck, and in the Stiffness of its Legs.

An Elk of middle Stature measures between five and six Feet from the End of the Nose to the joining on of the Tail; the Tail itself is not more than two Inches long: The Neck is short and slender: The Ears are nine Inches in Length, and about four in Breadth. The Authors who have taken our Elk to be the Onager, or wild Ass of the Antients, have omitted to argue from this Circumstance, which would have appear'd more in their Favour than any thing they have thought of, the Ears of the Elk being indeed like those of no other Creature, except the Ass; there is however no Foundation for this wild Opinion. The Colour of the Coat of the Elk in Winter is greyish, and not unlike that of an Ass; in Summer it is paler: It is however much longer than that of the Ass, being in general not less than three Inches in Length, and equalling in Thickness the largest Horse-hair. Every Hair is thickest in the middle Part, and not only small at the Point, but at the Root or near it; this last Smallness seems a Provision of Nature, that the whole Coat of the Animal might not always stand erect. The Hairs when cut, and examined by the help of a Glass, appear spongy within like a Rush. The upper Lip of the Elk is remarkably large, and detached from the Gums, but *Pliny* carries this Circumstance too far, when he tells us, that it is so large that the Creature is obliged to go backwards as he feeds to prevent its getting into his Mouth. Nature has provided the Elk with two particularly large and strong Muscles for the lifting up this Lip, to prevent any Inconvenience from its Size. The Articulations of the Legs of the Elk are remarkably close, and the Ligaments short and thick, and very hard, so that the Creature, though not without Joints in this neces-

fary Part, as the Antients imagined, yet has them in Reality, much less supple and pliable than other Animals.

The Hoof of the Elk became in Credit for the Cure of Epilepsies, from a Report, that this Creature was itself subject to that Disease, but that it cured itself by putting the Hoof of the left hinder Foot into its Ear. This is a very unlucky Circumstance in Regard to this Animal, which must be the last of all Creatures in the World to be able to get it there. How the antient Accounts, that allow the Elks no Joints in the Legs, can be made to countenance this Story is hard to conceive, nor indeed is it much easier to make the latter one do it. *Olaus Magnus* banters the whole Story in a very pleasant manner, by changing the Foot, and telling us, that the only Hoof that has any Virtue, and which the Creature always applies to the Cavity of its own Ear, is the outer Hoof of the right Foot; a Part it is wholly impossible for a Creature form'd like the Elk ever to have got there.

The Horns of the Male Elk are of a very singular Make, they are not branched out in the manner of the common Deers Horns, but they have a short and thick Trunk near the Head, which by Degrees expands into a great Breadth like a Hand, and has several little Prominences like Fingers growing out from its Edges. They live in Herds, and are a very timorous Animal, falling upon the least Wound.

The Virtues of the Hoof, in the Cure of the Epilepsy, may be as great as those of many other Substances of the same Kind, all of them containing a volatile Salt; but it is extremely probable, that the Hoof of any other Animal will do as well as that of the Elk; and very certain, that one of the Hoofs of this Creature will answer the Purpose full as well as another. It is never heard of in extemporaneous Prescription, but is kept in the Shops as an Ingredient in some of the old Compositions.

P A R T S of A N I M A L S

Used in M E D I C I N E.

C L A S S the S E C O N D.

H O R N S.

OF this Class we have also only one Substance now in Use, which is that of the common Deer.

C H A P T E R

Particularly in the Pulvis ad Guttatam.

The fatid oil of Hawthorn recommended much in fits, Goodlands Drops were got
from Rev. Lick -

CHAPTER I.

CORNU CERVI,
Harts-Horn.

HARTS-HORN is a Drug that comes into Use as many Ways, and under as many Forms as any one in the whole *Materia Medica*. What we keep in the Shops under this Name, are the whole Horns of the common Male Deer, as separated from the Head, and without farther Preparation: As this Creature's Horns fall off every Year, and new ones are produced in their Place, it is principally these fallen Horns that are brought into the Shops.

The medical Writers tell us, that the medicinal Harts-Horn should be that of the true Hart or Stag, known by the Name of the red Deer, the *Elaphus* of the *Greeks*; but at present we use only those of the common Deer of our Parks: The Difference in all Probability, as to their Virtues, is very immaterial.

Our common Deer, whose Horns then are the *Cornu Cervi* of the modern Shops, is that Species call'd by the Antients *Cervus platyceros*, the broad horn'd Deer; and by the Moderns *Dama*; in *English* we call it the Fallow Deer, the Male the Buck, the Female the Doe, and the Young the Fawn. It is observable however, that this Creature is not the *Dama* of the Antients, the Descriptions they have left us of that Animal are very imperfect, but they seem to belong to something of the Goat, not of the Deer Kind. The Fallow Deer is no where so frequent as in *England*, we have perhaps more Parks for the breeding this Creature in this Island, than there are in all *Europe* beside. It is much smaller than the Stag or red Deer, and is also distinguished at Sight from it by its palmated Horns.

The chemical Analysis of Harts-Horn is sufficiently known: It yields a Water highly impregnated with a volatile Salt which is call'd Spirit of Harts-Horn, with a fetid Oil, and a volatile Salt, by the common Distillation in a Retort. The Remainder in the Bottom of the Retort, after the Distillation is finished, is black, but on calcining in an open Fire it becomes white and friable, and is what we keep in the Shops under the Name of burnt Harts-Horn. Beside these Preparations we use the thin Shavings of the Horns, which, on long boiling in Water, become a Jelly. This Jelly is nutritive and strengthening; it is sometimes given in Diarrhœas, but a Decoction of the burnt Harts-Horn in Water is more frequently used for this Purpose, and is what is call'd Harts-Horn Drink.

The Salt of Harts-Horn is a great Sudorific, and is given in Fevers of many Kinds with great Success; the Spirit has the same and all the other Virtues of volatile Alkalis, and is used to bring People out of Faintings by its Pungency, holding it under their Nose, and at the same Time pouring down some Drops of it in Water.

PARTS of ANIMALS

Used in MEDICINE.

CLASS the THIRD.

BONES.

Of this Class we have only three Bodies kept in the Shops.

1. OS or LAPIS MANATI. 2. OS SEPIÆ. 3. OS E CORDE CERVI.

The latter of these is no more than an ossify'd Artery.

CHAPTER I.

LAPIS MANATI,

Stone of the Sea-Cow.

THE Substance call'd *Lapis Manati* is an oblong Body, of an uneven Surface, and bony Texture: It is of a fine clean white Colour; about three quarters of an Inch in Length, and a third of an Inch in Breadth; moderately heavy, considerably hard, and of no remarkable Taste or Smell. It is properly the *Os petrosum* of the Animal. The Fish to which it belongs is of the cetaceous Kind, but is remarkable for two Fins at its Breast like Hands, whence the *Spaniards* first named it *Manati*. *Artedus* has described it under the Name of *Thricecus*, and other of the ichthiographic Writers under those of *Taurus Marinus*, *Vacca Marina*, and *Manati*.

It is a very bulky Animal: It grows to fifteen Feet long, and seven or eight Feet in Circumference: Its Head is like that of a Hog, but that it is longer and more cylindric: Its Eyes are small, and it has no external Ears, but only two little Apertures in the Place of them, yet its Sense of Hearing is very quick: Its Lips are thick, and it has two long Teeth or Tusks standing out of the Thickness of a Man's Thumb, and five or six Inches in Length; and several other flat Teeth in each Jaw. The pectoral Fins, which resemble Hands, stand very forward on the Breast; they consist each of five Bones or Fingers as it were, joined together by a Membrane: There is no Fin on the Back, and the Tail is, as in the other Fishes of the cetaceous Class, placed horizontally. The Male and Female Parts of Generation, and the Navel, are like those of the human Species; and the Female has two round Breasts placed between the pectoral Fins. The Skin is very thick and hard: It is not ~~scaly~~ as in Fishes, but hairy as in Land Animals.

The BONE of the CUTTLE FISH. 837

The Creature lives principally about the Openings of large Rivers, and feeds on Vegetables. Its Flesh is white like Veal, and is very well tasted. It is frequently met with about the Mouths of the large Rivers in *Africa*, the *East Indies* and *America*. The Natives of many Parts of *America* live in a great measure on the Flesh of this Animal: They salt it as Beef, but it loses all its Flavour by this Management.

The *Lapis Manati*, as it is called, is supposed by some to be a powerful Diuretic, and it was a long Time a Custom to wear it about the Neck, as an Amulet against Hæmorrhages, and for Children to prevent Disorders in the cutting their Teeth. We seem to have taken up the Account of its Virtues on Credit from the *Indians*, and consequently a more rational Inquiry into Things of this Kind has taught us to despise them, and the Drug is now wholly neglected.

CHAPTER II.

OS SEPIÆ,

The Bone of the Cuttle Fish.

THE *Os Sepiæ* is an oblong and broad Substance, somewhat approaching to an oval Figure, but over proportioned in Length, for what we regularly understand by that Term. It is very light and of a whitish Colour, and is composed of two very different Substances, a hard crustaceous Shell, which is thin, and of a somewhat brownish or yellowish Hue, and a thick softer Substance, easily scraped with the Nails, and much paler or whitish.

The usual Length of this Bone is four or five Inches; its Breadth is about two Inches and a half, or three Inches, and its Thickness about three Quarters of an Inch; though this is almost entirely made by the soft Part, the hard Shell being not thicker in most Parts than a Shilling. It is not flat on either Surface, but somewhat rounded, especially on the shelly Part.

This bony Substance serves for the Support of the Body of a very singular Kind of Sea Animal, of the exanguious Kind, in many Respects resembling the Polype, though strangely different from it in Size. Its Body is of an oblong and depressed Figure, and it has proceeding from the Head ten Feelers or Arms, two of which are much longer and stronger than the others. The whole external Surface of the Body is soft and fleshy; and this Bone is contained within it, running down the Back. It has a Bag in its Neck containing a black Liquor, which, when in Danger of being taken, it emits into the Water, and blackens it to such a Degree, as to hide itself by it, and frequently makes its Escape.

It is common in the *Mediterranean*, and about the Coasts of *France*. The Flesh is well tasted, and is frequently met with at Table, in the maritime Towns of *France* and elsewhere.

The Bone is recommended by many of the medical Writers against nephritic Complaints, and in Asthmas: Some also prescribe it as an Astringent. At present it is only known in the Shops as an Ingredient in Tooth Powders, and is principally used by the Goldsmiths for casting.

CHAPTER III.

OS DE CORDE CERVI,

Bone of a Stag's Heart.

THIS is another Article of the *Materia Medica*, which the common Deer furnishes us. It is a flattish and thin Substance, usually somewhat hollowed, though sometimes quite plain. It is about an Inch in Length, and usually a third of an Inch in Breadth. Its Figure is somewhat triangular, or broader at one End, and terminating in a Point or small End at the other: It is very light, and as thin as a Sixpence. Its Colour is a pale whitish, usually with some Cast of brown in it. Its Surface is tolerably smooth, and it is somewhat tough. It has no Smell, and scarce any Taste. It is properly a Congeries of Arteries at the Bottom of the Stag's Heart, ossified as we sometimes find the crural and other Arteries in human Bodies. The Hearts of Oxen have often the same Kind of Ossification in some of the Arteries, and what have been used in the Shops, have been much more frequently taken from the Hearts of these Creatures, than from those of Stags. At present what is met with is generally a very different Substance from both, the *Offa Hyoidea* of Animals of various Kinds being kept under this Name: This however is a Fraud of very little Consequence, neither the genuine Drug having any Power to do Good, nor the counterfeit to do any Harm.

PARTS of ANIMALS

Used in MEDICINE.

CLASS the THIRD.

TEETH.

THE Credulity of some former Ages had loaded the Shops with several Medicines of this Class. At present we have only two received as such. These are, 1. IVORY. And 2. The Tooth of the Narwal, called UNICORN'S HORN.

CHAPTER I.

EBUR,
Ivory.

IVORY is a hard, solid, and firm Substance, of a fine white Colour, and capable of a very good Polish. It is the *Dens Exertus* of the Elephant,
a Crea-

a Creature famous for its Size ; a better Idea of which can indeed no way be had, than by observing these Teeth. What must we think of the Creature, that is able to carry without Inconvenience on each Side his Jaw, a Tooth of six or seven Feet in Length, of the Thickness of a Man's Thigh at the Base, and almost entirely solid ; the Weight of the two sometimes not less than three hundred and thirty Pounds.

The Elephant is indeed by much the largest of all Beasts. It is, when full grown, not less than fifteen Feet high to the Ridge of the Back. The Body is of an amazing Bigness, the Legs, notwithstanding the Height of the Creature, being very short. The Feet are very broad, and the Soles of them are not covered with any horny or other hard Matter, but only with a Membrane, and that of no great Thickness : It is about half as thick again as the general Skin of the Body, but it is soft enough to cut very easily with a Knife : In the Circumference of this there are five Protuberances, answering to Toes. The Ears are very large and dentated round the Edges ; they are naturally pendulous, but the Creature can erect them at Pleasure in some Degree, drawing them up into the Figure of a Purse, and making them project forwards ; this is a Situation it always gives them when angry, at which Time also he always contracts his Trunk, that he may be ready for Mischief.

The Trunk, properly speaking, is no other than the Nose of the Animal carried out into a peculiar Length, and rendered flexible, that it may serve him by Way of a Hand to lay hold of Things, and to take up his Food, and convey it to the Mouth. He can at Pleasure contract the whole Trunk into the Length of about a Foot, and from that can throw it out with a surprising Force to the Length of five Feet, so as to give any Creature a terrible Blow before he seizes him with it. The Eyes are remarkably small in proportion to the Size of the Animal, being not larger than those of a Sheep.

The *Dentes Exerti*, or Ivory Tusks, are hollow from the Base to a certain Height, and the Cavity is filled with a compact medullary Substance, seeming to have a great Number of Glands in it.

The Elephant has no Clavicles, but the first Pair of Ribs, which serve in the Place of them, are broad in the anterior Part. The Ribs are, in Number, twenty Pair, including the spurious with the true. The Thigh Bones, the *Ossa Pubis*, and *Coxæ*, differ in scarce any Respect, except the Size, from those of the human Species : And to this Resemblance is owing, in a great Measure, the Report of the Skeletons of Giants of enormous Magnitude being found : People having found some of these Bones buried in the Earth, mistaken them for human ones, and computed the Stature of the Man who possessed them, by comparing them with those of the human Skeletons of ordinary Size. The first Writers on such a Subject have said that by the Measure of these Bones, the Skeleton, to which they belonged, must have been so many Feet high, and those who borrow the Account afterwards, have told us that Skeletons so large were found.

The Head of the Elephant is large, even in proportion to its own vast Bulk ; the Mouth however is but small, it has in each Jaw four *Dentes Molares* or Grinders, which are of an amazing Size, and when seen out of the Mouth, would be taken for a thousand Things rather than Teeth. They seem
composed

composed of eight or nine single, long and narrow Teeth placed at some Distance from one another, and the whole Space between filled up with a bony Substance, less hard and white indeed than these Teeth, but connecting the whole into one Mass, in which the Teeth, as we call them, form longitudinal Ridges. There are no *Dentes Incisorii* or cutting Teeth in either Jaw.

The Skin of the Elephant is commonly said to be naked, but it is not entirely so: There are a few Hairs placed at Distances on it, and these are very thick and considerably long. The Colour of the Skin is a brownish tawny, and it has in several Parts a Sort of Protuberances like Warts, which had split at their Heads on it. These when cut, in whatever Direction, have much the Appearance of what we call Whalebone; they adhere so firmly to the Skin, that no Part of them can be separated without tearing it. The highest of these hardly rise to the Height of a Quarter of an Inch, the others are much lower. The Hairs grow principally out of these Eminences on the Skin, and would appear more numerous than they do, were it not that the Animal has a Habit of rubbing himself against every Thing hard that comes in his Way, probably to allay some Itching in his Skin, and by that means of breaking most of them off near the Roots. These Hairs are thicker than Hog's Bristles, and are of a dark blackish Colour. The Skin is as thick as the Leather used to make Shoe Soals, and cuts much like the horny Part of Brawn. The Elephant is of the Class of retromingent Animals; he thrusts the Penis out of its Vagina to make Water, and bending it backwards, the Urine falls between or behind the hind Legs. It is probable also from this Situation of the Penis, that these Creatures copulate backwards. The Vagina of the Penis is of a horny Hardness at its Extremity, and is naturally so contracted, as hardly to admit the End of a Finger. The Penis as included in the Vagina seems too small for the Bulk of the Animal, but when that is opened it is found to be as long as that of a Horse, and considerably thicker. The Urethra is so large that it admits a Man's Finger.

The Tongue of the Elephant is somewhat larger than that of an Ox, and has this remarkable, that near the Root there is a Duct of considerable Depth leading toward the Stomach.

The Foot of the Elephant is of an extremely singular Structure. Its Toes, which are five in Number, are not divided as in other Animals, but remain connected and cohering together, and are covered by one common Skin, but their Extremities protuberate a little at the Verge, and are armed with Nails which are thick and obtuse.

So unweildy an Animal as the Elephant, one would imagine the last to be celebrated for its Address and Sagacity; yet we find Wonders related of it in both Respects. Its Trunk is indeed an Instrument of vast Use to it, and is capable of Motions in so many Directions, that there is scarce any thing necessary to its well-being, that it cannot do with it: As to its Sagacity, we are to take the Stories of it on the Credit of those who relate them, the Creature being too seldom seen among us, to give us Opportunity of making Observations. It lives only in hot Countries. The finest Ivory is brought from *Angola*, and from the Islands of *Ceylon*, *Sumatra*, &c. In the *East Indies* great Quantity of it is not taken immediately from the Head of the Animal, but found buried in the Earth.

It is observed that the *Ceylon* Ivory, and that of the Island of *Achem*, do not become yellow in the wearing as all other Ivory does; and the Teeth of these Places bear a larger Price for this Reason, than that of the *Guinea* Coast.

Dioscorides tells us, that Ivory by being boiled in Water about six Hours, with the Root of Mandrake among it, it becomes so soft that it may be fashioned with great Ease. This is an Experiment so easy, and at the same Time of so much Consequence, if true, that one would wonder an Author, so accurate in many things as *Dioscorides*, should not have made it before he recorded it.

Ivory, distill'd in a Retort, yields a small Quantity of an insipid and scentless Phlegm; then a larger Quantity of a pungent Liquor, like Spirit of Harts-Horn, being Phlegm with some volatile Salt dissolved in it; after this comes over a brown fetid Oil, and a moderate Quantity of volatile Salt concretes about the Sides of the Receiver. These have all the same Virtues with the Preparations of Harts-Horn; and the Raspings of Ivory, in the same manner as Shavings of Harts-Horn boil into a Jelly with Water, and have the same restorative Virtues.

C H A P T E R I I .

CORNU UNICORNI, *Unicorn's Horn.*

WHAT is known in the Shops under the Name of Unicorn's Horn, and has been shewn in the Cabinets of many great Collectors as such, is a long and slender bony Substance: Its Length is six, eight, or ten Feet, seldom more than this: Its utmost Bigness at the lower End is not more than that of a Man's Wrist, and from this it very gradually tapers to the other End, where it terminates in a Point not very sharp. It is hollow at the Base, and the Cavity continues up to four or five Feet, but it grows smaller all the Way: The Colour of the whole is white like Ivory, its Surface is smooth and glossy; and the whole is wreath'd or twisted spirally as it were in a very beautiful manner, from the Base to within a few Inches of the Top: The Substance of the whole is dense, firm, and hard as Ivory, and is capable of as fine a Polish.

This Horn, as it is still call'd, was brought into *Europe* long before any thing was known of its true Origin; it was generally declared to belong to a Beast, which the Imagination of some fanciful People had framed, and the Credulity of others had led them to believe existed, under the Name of an Unicorn; under this Opinion the Scarcity of the thing, and its pretended Virtues, made it extremely valued. We are told of one, in the Possession of one of the *French* Kings near two hundred Years ago, valued at twenty thousand Pounds; long after this they sold also at a very considerable Price, but at present they are greatly sunk in their Value.

They were pretended to be Remedies against Poison, and to have a thousand other Virtues as imaginary as the Creatures supposed to wear them: These were figured under the Shape of Horses, Deer, Hogs, and Bulls, but all with the singularity of one of these enormous Horns in their Forehead, and that

generally so injudiciously placed by the Painter, that the Creature could not possibly have brought his Head to the Ground to feed for it.

A better Knowledge in natural History has long since exploded these erroneous Accounts; and we have been informed by all the Authors who have written lately on these Subjects, that it belongs to no Land Animal at all, but to a Fish of the Whale Kind, an Inhabitant of the Northern-Seas, of which however some affirm it to be a Horn, and others a Tooth, growing from the left Side of the upper Jaw. About a Year ago we had an incontestible Evidence of the Truth of this last Assertion, in a Skeleton of the Fish which it belongs to, carefully preserved and publickly shewn in *London*.

The Fish had not been a full grown one: Its Skeleton, which was very entire to the Tail, measured but fourteen Feet, exclusive of the Horn, as it is call'd, which was seven Feet and a half long; this proceeded from the left Side of the Head, as all the accurate Naturalists have of late agreed of it, and was there not affix'd to the Skull in manner of a Horn, but inserted by a Gomphosis in the Jaw in the manner of a Tooth; what was singular also in it was, that though of a roundish Figure in its whole Length beside, it was flattened where it entered the Jaw, and was fix'd extremely strongly in it. The Authors who have differed about its being a Horn or a Tooth, have perhaps quarrelled about Words, rather than Things, and have only wanted to consider the Definitions of a Horn and a Tooth, in order to set them right. It is beyond Dispute that it is a Tooth, its Substance and Articulation prove it, though perhaps its Office is rather that of a Horn, as it must certainly be, at the Pleasure of the Animal, a very terribly offensive Weapon.

The Fish which is furnished with it is of the cetaceous Kind; it grows to five and twenty Feet long, and is so big bodied as to be at least half its Length in Diameter: It has an Opening at the back Part of the Head, through which it discharges Water: It has no Fin upon the Back, and its Tail is placed horizontally, not vertically as in the generality of Fishes: Its Head is large and like that of a Bream; it has no Teeth except in the upper Jaw, where there is only this single, large, and strongly situated one. The Fish is frequent in the Northern Seas, about *Greenland* and *Iceland*, where it is call'd *Narwhal*: The Authors who have written of Fishes in general call it *Monoceros Piscis*, the Unicorn Fish.

The Virtues ascribed to it are now no more regarded than its pretended Origin; it probably is of the Nature of Ivory, but as that is more easily had, this beautiful Tooth is only kept as an Ornament to Druggists Shops, and in Collections of natural Curiosities.

Gascoigne Powder now Called Pulvis Beroandicus.

P A R T S of A N I M A L S

Used in M E D I C I N E.

C L A S S the F I F T H.

C L A W S.

Of this Class we have at present only one Substance.

C H A P T E R I.

CHELÆ CANCRORUM,
Crabs Claws.

THE Crabs Claws of the Shops are the Tips of the Claws of the common Crab broken off at the verge of the black Part; so much of the Extremity of the Claws only being allow'd to be used in Medicine as is tinged with this Colour. The Blackness however is only superficial; they are of a greyish white within, and when levigated furnish a tolerably white Powder: They are of various Sizes, from the Thickness of a Man's Thumb to twice that or more at the larger End: Our Druggists are apt to sell more of the Claw than the bare black they are allow'd to vend, but the Restriction is founded on Fancy, and the Variation from the Rule is of no Consequence.

The Creature to which these Claws belong is the common Crab that we have at our Tables; it is one of the crustaceous Animals of the generality of Naturalists, one of the Class of the *Insecta Aptera* of *Linnaeus*. It grows to a very considerable Size, our Markets frequently furnish such as weigh several Pounds, but there are occasionally met with much larger than these. Its Body is covered with a hard Shell of the same Nature with the Claws, and of the same medicinal Virtues: It has ten Legs, the two foremost of which only are large however, and formed into these double Claws at the End. It is singular of this and some other of the crustaceous Animals, that when any one of their Legs is wounded, they have a Power of throwing off the Limb in the midst of another Joint nearer the Body, where the Wound is of no ill Consequence to them, and from whence there gradually grows another compleat Leg.

The Crabs Claws are of the number of the alkaline Absorbents, but they are superior to the generality of them in some Degree, as they are found on a chemical Analysis to contain a volatile urinous Salt. They are always kept in the Shops levigated to a fine Powder, and are sometimes prescribed singly, tho' rarely, because of their want of the beautiful white Colour of some of the others; they are the Basis however of the famous *Gascoign Powder*, the *Lapis Contrayerva*, and many other of the compound sudorific Powders.

P A R T S of A N I M A L S

Ufed in M E D I C I N E.

C L A S S the S I X T H.

S H E L L S.

C H A P T E R I.

DENTALIUM,
The Tooth Shell.

THE true History of Shell Fish has been, till of very late Years, so little known, that it has been no uncommon thing to find two Authors expressing two very different Shells by the same Name. It is not wonderful therefore, that several Species of the same Shell, and some of other Genera approaching to it in Figure, should have been introduced into the Shops, and even described by Authors, who have written of the *Materia Medica*, as the true *Dentalium*: All the *Tubuli Marini* or Pipes of Sea-Worms, have been by one or other call'd *Dentalia*, and our Druggists have long sold under the same Name, a Substance no way related to the Shell Kind; the Bones found in the Heads of several Fishes.

Some of the more accurate Writers have described the common, short, and smooth white *Tubulus Marinus*, under the Name of *Dentalium*, and in Consequence of this have afterwards call'd the true *Dentalium*, *Entalium*, and so wholly lost the true *Entalium*. If our *English* Name of *Dog Tooth Shell* were indeed to be regarded as genuine to the medicinal Shell, there would be some Appearance of Reason for this, as the little white one thus offered under the Name is much more like the Tooth of a Dog than the true Kind. The Authors who have best understood the Subject however, have written otherwise, they only represent it as resembling a Tusk or *Dens Exertus*, not as the Tooth of a Dog in Particular.

The true officinal *Dentalium* is one of the *Canales* or *Tubuli Marini Simples* of Authors. It is a small, oblong, and hollow Shell; its Length is about two Inches and a half; its Thickness at the larger End about that of a large Goose Quill, from this Part it gradually grows smaller all the Way to the other End: It is very light and thin, of a whitish Colour with a Cast of green, and is marked with a number of pretty high longitudinal Ridges: It is not absolutely straight, but somewhat bent in the manner of a Horn, and has usually three or four Fasciæ or Bands running round it at different Distances, sometimes broader, sometimes narrower, and sometimes of a deeper, sometimes of a paler Colour than the rest of the Shell.

The Animal that inhabits this little Tube is of the Genus of the *Nereis* of *Linnaeus*. Its Body is soft and rounded, and it has four Tentacula like what are call'd the Horns of Snails, which it thrusts out at Pleasure; the whole Shell is sometimes green, sometimes whitish, but more frequently the larger End is greenish, and the Colour grows gradually paler, till at the smallest End it is almost entirely white. The Shell is very common in the *East-Indies*, and is not unfrequently brought from thence for the Collections of the Curious, among the other Oriental Shells: It is not peculiar however to that Part of the World, but it is found on the Shores of *Italy*, *France*, and many other Parts of *Europe*.

Great things have been recorded of the Virtues of the *Dentalium*, but it has in Reality no other than those of an Alkali and Absorbent, so that the Readiness of Oyster-Shells has now thrown it quite out of Use.

CHAPTER II.

ENTALIUM.

The Pipe Shell.

THE *Entalium* has been as ill ascertained as the *Dentalium*, by the Writers on the *Materia Medica*: Several of the common Pipes of Sea-Worms have been described by Authors under its Name, as well as under that of the *Dentalium*; and another very unlucky Error about it has been the describing the *Dentalium* under its Name, in Consequence of the taking a small smooth Species of the same Genus for the true *Dentalium*.

The *Entalium* is of the same Genus with the former, one of the *Canales* or *Tubuli Marini* of Authors, inhabited by one of the *Nereides* of *Linnaeus*, an oblong, round bodied Animal with four Tentacula like what we call the Horns of a Snail. The Shell itself is of an oblong cylindric Figure; its Length is about two Inches; its Thickness at the largest End is about that of a Swan's Quill, and it gradually tapers to the other, though that is still considerably thick, and is open as well as the other: It is of a greenish white Colour, longitudinally rigid with a great number of Lines, much finer and smaller than those of the *Dentalium*: It has also several narrow circular Bands or Lines, and upon the whole has greatly the Appearance, on a slight View, of one of the *Dentalia* with its smaller End broken off; when closely examined and compared however, it is found to be a quite different Shell.

It is frequent in the *East-Indies*, and is sometimes found on the Shores of *Europe*, but it is much more scarce than the other.

The Virtues ascribed to it are the same with those of the *Dentalium*, as also are its real ones, neither of them having any Title to more than those of alkaline Absorbents, like the other testaceous Powders.

CHAPTER III.

UNGUIS ODORATUS,
The Nail-like, sweet Shell.

THE *Unguis odoratus* was a Medicine famous among the Ancients, and used in considerable Quantity; but it has for a long time been out of Credit, and the Consequence of the Neglect that has been shewn it, has been the losing its real History, and the mistaking different Substances of the same Origin and Nature, though the Produce of different Animals for it. Its very Names among us, both the *Latin* and *English*, imply Contradictions. We call what we suppose to be the *Unguis odoratus* of the Ancients, *Blatta Byzantia*, a Name which expresses a Place very distant from those which furnished the Ancients with their *Unguis odoratus*: They had theirs only from *Babylon* and the Red Sea; ours comes, as its Name expresses, from *Constantinople*. *Dioscorides*, from the Resemblance of theirs to the human Nail, called it *Onyx*, a Nail; we unluckily give ours the Name of a Hoof, and seem to refer it to the Quadruped Class. Its common Name with us is the sweet Hoof, and the Shape of what we use is often much more like the Claws of some of the Quadrupeds than the human Nail.

The Truth is however, that our *Blatta Byzantia*, or sweet Hoof, is not the same with the *Unguis odoratus* of the Ancients, though nearly allied to it. The true *Unguis odoratus* of the Ancients is a thin, flat, testaceous Substance, of an oblong or oval Figure, rounded at both Ends, and marked on the Surface with three or four concentric Circles or oval Lines. Its Colour is a dusky brown, with some Admixture of the Orange, sometimes of a purplish Tinge. Its usual Size is that of a full grown Nail of a Man's Thumb, and its Thickness about the same with that of the Nail, or rather less than that. It is tough, flexible, and elastic, and has no peculiar Smell or Taste.

The Want of Smell might seem to argue this to be different from the original *Unguis odoratus* of the Ancients, but nothing is more certain than that no Substance of the Nature of this ever had any, but that the Sweetness the Ancients perceived in it was wholly owing to its being brought over to them among other Drugs which were aromatic and sweet, and gave this a Smell that continued with it a long Time.

Beside this genuine *Unguis odoratus* of the Ancients, or, as they sometimes improperly called it, *Onyx Indicus*, for they had it according to their own Accounts only from the Red Sea, they had another smaller Kind from *Babylon*; this was very thin, and was of a paler Colour, and subject to curl up in the drying, so as to become of an oblong Figure.

Both these Kinds may at present be met with, and answer perfectly to the Descriptions of the Ancients. They are the *Opercula* of Shells of the Murex Kind, frequent now, as well as in the Days of *Dioscorides*, in the Red Sea: The larger Kind belongs to a very rough Murex with sharp Protuberances on the Shell, the other to a smaller covered with obtuse Prominences, neither of them accurately described by the Authors who have hitherto written on these Subjects. The first is a tolerably elegant Shell, the other has less Beauty. A Substance of the

The NAIL LIKE SWEET SHELL. 847

the like Kind, and much resembling the larger and finer ancient *Unguis odoratus*, is to be observed in our common Wilk; all the Murices also have such, but as they are attached, not to the Shell, but to the Body of the Fish, they are lost with the fleshy Part, and never preserved with the Shell, though a careful Collector of Shells would much wish to have them. They are a Kind of thin crustaceous Substance, fastened to the upper Part of the Body of the Fish, with which when it retires into the Shell, the whole Aperture is stopped to prevent any thing getting in.

What we called the *Blatta Byzantia*, from the Place whence we used to have it, is an *Operculum* or Cover of a Murex as well as the *Unguis odoratus* of the Ancients, but it belongs to a different Species of that Genus. We have indeed two distinct Kinds belonging to two several Species of that Fish, as the Ancients had before us, but both as different from either of theirs, as from one another. The most approved one is of a Figure nearly approaching to that of the larger *Unguis* of the Ancients; it is oval or roundish, about three Quarters of an Inch long, and more than half an Inch broad in the largest Specimens, though often much smaller. It is very thin, of a brown Colour, flexile and elastic, and somewhat transparent. The other Kind of *Blatta Byzantia* of our Times is of an oblong and narrower Shape, usually much broader at one End than at the other, and of a firmer Texture. This is sometimes flat, often it is curled up so as to resemble the Claw of a Beast of Prey, the Sides being each Way rolled inward, and almost touching one another.

Both these Kinds, as well as the two *Ungues* of the Ancients, are naturally without Taste or Smell. Our Druggists depend on the Ignorance of those who deal with them, so far as to offer to Sale the white Bones taken from the Heads of Fish of several Kinds, under the Name of *Dentalia* generally, but sometimes also under that of *Unguis odoratus*.

The *Unguis odoratus*, chemically analysed, yields first a small Quantity of insipid Phlegm; then a Phlegm of a volatile alkaline Taste, in somewhat larger Quantity; after this a volatile alkaline Salt in small Quantity, and a little thick Oil. As to its medicinal Virtues, we at present pay very little Respect to them. The Ancients used it in Fumigations, and *Dioscorides* tells us expressly, that it had, when burnt, a very disagreeable Smell: It is indeed much like that of Horn. The *Greeks* were very well acquainted with the Nature and Origin of this Drug: *Dioscorides* says it was the Covering of a Fish of the Murex Kind: He expresses himself by the Word *Poma*, a Word used in his Time, to express the Stopple put into long-necked Vessels, in which Liquors were kept.

Dioscorides is however very faulty in his Account of this Drug; he sets out with telling us that it was brought to them from the *Indies*, and that it acquired its sweet Smell from this, that the Animal it belonged to fed on the *Nardus Indica* or *Indian Spikenard*, which grew at the Bottom of the Lakes whence it was produced. This carries a Contradiction with it, to what he himself gives as to the History of Spikenard, which neither he, nor any of the other Ancients ever made to be a subaqueous Plant; he tells us himself in the History of that Drug, that it was produced in Mountains in *India*: He indeed mentions another Kind of it found in damp watery Places, but not under Water, as it must

be, in order to a water Shell Fishes feeding on it. *Avicenna*, who has translated *Dioscorides's* Account of the *Unguis odoratus* into *Arabic*, was aware of this Absurdity in his Author, and has taken the Liberty of changing the Word which *Dioscorides* used to express Lakes, into the Name of an Island in *India*, on which Spikenard grew, and about the Shores of which, the *Murex* producing this Drug was found. This has much more the Appearance of Truth and Reason than the other; but it quite runs away from the Meaning of the *Greek* Author, as the Fish could not be supposed to leave its Element and come on Shore to feed on this aromatic Vegetable. But this is not all the Objection that lies against *Dioscorides's* Account of the *Unguis odoratus*, or *Onyx Indicus* as he calls it, after having made it first the Product of the imaginary nardiferous Lakes of *India*; he toward the End of his Account tells us, that there were only two Kinds of it known at his time, and that the one of these was brought from the Red Sea, and the other from *Babylon*.

I have had Occasion, in the explaining *Theophrastus*, to accuse *Pliny* very frequently of a Practice, which *Dioscorides* also seems by this Passage not to be wholly free from: This is the collecting a general Account of his Subject from three or four different Authors, and the giving the Opinions of each crude as he met with them, without observing that they contradicted one another, and consequently that one Part of the mixed Account could by no means be made to agree with the other. There are some other Passages in the Writings of this venerable *Greek*, which unluckily discover the same Fault. But upon the whole, it is to be allowed, that his History of the *Materia Medica* is vastly superior to that of any other Writer, of or near his Time. It may be added indeed, to any written before the latter Part of the last Century.

Natural Productions of Animals

Used in MEDICINE.

CLASS the FIRST.

STONY CONCRETIONS.

THESE are produced in different Parts of Animals, the Stomach, Gall, Bladder, &c. We have three of them in use in the Shops.

1. BEZOARS. 2. PEARLS. 3. The STONES called CRABS EYES.

Almon says a "y" of Best is found in the East in the Eyes of Stags. The Stags eat Serpents, & before they have received any Hurt from them run into the Water into which they go on till it comes up to their Heads, & there continue wth taking it, till their Eyes begin to run. The Lignor heaps continually, using out & thickens till it comes to y^e Size of a Chestnut; When The Stags find the force of the Poison, & that they come out of the Water & return to their usual Haunts, This substance grows by degrees harder & by their frequent Rubbing falls off.

CHAPTER I.

BEZOAR ORIENTALE,
Oriental Bezoar.

BEZOAR is a Drug of very great Price and of very great Fame, but which is not of the Number of those Things that have been proved to deserve the Repute they stand in. It is a moderately hard and heavy Stone, very variable and uncertain in Size, Shape, and Colour. It is frequently roundish or oval, and in general, its Size is between that of a Horse Bean and that of a small Walnut, though there are some smaller than Peas, and others much larger than those mentioned here, but the latter are rare. Many of them instead of round or roundish, are oblong; some are flatted, and others irregularly undulated, gibbous, or hollowed. The most usual and most esteemed Colour is a dusky Olive or greenish brown; but there are some grey, some whitish, and some of a brownish yellow.

It is always smooth and glossy on the Surface, and when broken is found to be composed of a great Number of Crusts or Coats of stony Matter laid one over another, and often formed upon a Piece of a Stick, or Seed of a Fruit, or some such thing, for a Nucleus or Basis.

Bezoar is brought to us from many Parts of *Persia* and the *East Indies*. It is to be chosen entire, not in Scraps or Fragments, of a greenish or olive Colour, with some Admixture of grey in it, and such as when rubbed on a Paper before whitened with Cerufs, gives a yellowish Colour. There is no Drug in which the Purchaser is more likely to be cheated than in Bezoar, unless he is circumspect. Its great Price has taught many People to counterfeit it; they seldom indeed make up such Stones, as when examined entire and then broken and viewed with Care, will pass upon a tolerable Judge; but they frequently encrease the Quantity of the Fragments of Bezoar with Pieces of Stones thus made.

The *Oriental Bezoar*, so much valued by us, is, like the Pearl, a Distemper in the Animal that produces it. It is a Concretion of stony Matter in the Stomach of a Quadruped of the Goat Class, described by *Aldrovand*, *Johnston*, and others, under the Name of *Caper Bezoarticus*, and *Hircus Bezoarticus*, and by *Ray* under that of *Gazella Indica Cornubus rectis longissimis nigris prope Caput tantum Annulatis*.

It is of the Size of one of our common Deer, and its Coat or Hair is of a greyish Colour, with a Cast of reddish brown, somewhat longer than that of our Deer, but shorter than that of the common Goat. The Head is much of the Shape of that of the Goat. The Horns are near three Feet in Length when the Creature is full grown; they are strait, and in that Part which is near their Insertion on the Head, they are annulated or marked with circular Rifings; all the other Part is black, smooth, and glossy. The Tail is near a Foot in Length, and is covered with Hair of the same Colour with that of the rest of the Body, but considerably longer. The Legs are very strong, and are covered with a short Hair. The Creature is very nimble, and runs about upon the Rocks in the Manner of our Goat. The Horns of this Creature are frequent in the Museums of the curious.

There are found from one, to five or six of these Stones, in the Stomach of a single Animal. Many of the Species are indeed wholly without them, and others of them have more than the Number just mentioned. Those which have a considerable Number of them, or that have but one large one, are easily known by their being emaciated, and less sprightly than the others.

Great Things have been said of the medicinal Virtues of this Stone, as a Cordial, Sudorific, and Alexipharmic. But at present, though it holds its Rank in the common Opinion, Physicians never prescribe it singly, and even the famous *Pulvis e Chelis Cacerorum compositus*, or Gascoigns Powder, as it is usually called, is more used by the good Women than by Physicians, and when prescribed by them, it seems rather given as an alkaline Absorbent than a Cordial.

Beside this, which is the famous *Oriental Bezoar*, and what is always understood by the Term Bezoar when simply used, there are several other Stones formed in other Animals in the same manner as this in the Bezoar Goat, and distinguished by their several Names, or by others expressive of the Places whence they are brought. These are, 1. The *Bezoar Occidentale*, or *Occidental Bezoar*. 2. The *Bezoar Simiæ*, or Monkey Bezoar. 3. The *Ægragropilus*, or German Bezoar. And 4. The *Pedro del Porco*, or Porcupine Bezoar.

BEZOAR OCCIDENTALE,

Occidental Bezoar.

The *Occidental Bezoar* is a Stone found in the Stomach of an Animal, as the *Oriental* is, but differing from it in Colour and Texture. We seldom meet with small *Occidental Bezoars*. They are usually of the Size of a large Walnut, often as big as an Egg or bigger, and some of them have been met with of three, four or five Times that Size. They are more regular in Shape than the *Oriental*, being generally roundish or oval. Their Colour is a pale whitish brown, or a faint grey with a ferrugineous Cast on the outside, but not within. The Surface of the *Occidental Bezoar* is not so perfectly smooth as that of the *Oriental*; there are often little Protuberances and Cavities on it, and sometimes Part of the external Crusts or Coats have been broken off, and their remaining Edges are seen: Where nothing of this is the Case, still the *Occidental* always wants the Gloss and shining Hue of the *Oriental Bezoar*. When broken it is found to be made up of Coats or Crusts in the Manner of the other, but they are much thicker, and often the Bezoar is radiated, or the several Crusts are formed of parallel Fibres, which together form Radii or Lines running from the Center to the Circumference. The *Occidental Bezoar* is as heavy or rather more so, than the *Oriental*; but it is not nearly of so compact a Texture, or so hard: It has usually some extraneous Matter for the Nucleus.

The *Occidental Bezoar* is brought to us from *Mexico* and *Peru*, and from some other Parts of *America*. It is to be chosen of as firm a Texture as may be, and of a pale whitish Colour, with a Cast of brown in it. It is liable to be counterfeited like the *Oriental Bezoar*, and this indeed is easier done in regard to this, than that, as its Colour is not so singular. The *Dutch* have a Method of mixing up some light Earths with other Ingredients into a Paste, with a strongly glutinous Matter, and putting them off, when formed into coated Lumps round some Piece of Stick or the like for, or rather among the *Occidental Bezoars*, especially in the broken Parcels. The

The Creature in whose Stomach the *Occidental* Bezoar is found, is one of the bifulcous Quadrupeds with deciduous Horns, and is enumerated by Mr. Ray among the Deer Kind. It is described by *Hernandez* under the Name of *Mazama seu Cervus*, by *Johnson* under that of *Capreolus Marinus*, and by *Marcgrave* under the Names of *Cuguacu-ete* and *Cuguacu Apra*, the former being the Female, the latter the Male. It is of the Size of a large Deer, and of a faint brownish Colour, with some silvery Hairs among it. Its Tail is short, its Legs slender, its Head small in proportion to the Body. The Male has Horns which are a Foot and half or more in Length, and are of a very singular Figure. The main Body of each Horn is single, roundish, and tolerably smooth: Near its Base it has one Branch issuing from it, never more than one, but that of a considerable Length, and at the Top it is divided into two other Branches, which are short and smooth, and terminate as the lower Branch does in a Point, which is paler coloured and more glossy than the rest. The Creature is very nimble. It is very subject to this distempered State of having Stones in the Stomach, but it rarely has more than one there at a Time.

The *Occidental* Bezoar is said to possess all the Virtues of the *Oriental*, but in a more remiss Degree, and therefore that it requires to be given in a larger Dose. It is by no means qualified to answer the Purposes of the *Oriental* Kind to our Apothecaries; the principal of which is the giving the fine yellowish green Colour to Gascoigns Powder, and therefore is but little esteemed by them, only some of them use it in the Compositions where the Colour is of no Consequence instead of the other.

BEZOAR SIMILÆ,
The Monkey Bezoar.

This is an extremely rare and valuable Stone: The great Virtues ascribed to it have set it at so high a Price that the Possessors of particular *Oriental* Bezoars that approach to its Colour, have often pretended to call them by its Name; but the genuine Stone has been seldom seen, except in the Cabinets of two or three Virtuosi, and in the Hands of some of the Princes of the Country where it is produced.

It is not met with very large: Of the few that have been known to be genuine, none has exceeded the Size of a large Nutmeg; that of a Hazel Nut or Horsebean is more frequent. Its Figure is always round or approaching to that Form; some are a little oblong, some oval, and sometimes it is flatted a little. It is heavier than any other Bezoar, and harder: Its Colour is a deep greenish Olive, so dark on the Surface that it appears black. It is perfectly smooth and very glossy: When broken, which is not to be effected without a very smart Blow, it is found to be of a very dark Colour, though without the Blackness of the Outside. It has always some Fragment of a Vegetable Substance for its Nucleus, round which the Matter of the Stone is laid in regular Beds or Coats, after the three or four first Coverings have formed the Rudiment of that Size to a Roundness: The Coats of Matter of which this Bezoar is formed, are usually thin, and are not very firmly united to one another; for if the Stone be suffered to fall, they will separate in one or more Places from one another.

The Animal in whose Stomach this precious Stone is found, is a Species of Monkey common to the *East Indies* and to *America*, and is described by

852. The PORCUPINE BEZOAR.

Marcgrave under the Name of *Guariba*. It is of the Size of a full grown Fox. Its Eyes are black and very sprightly. Its Ears short, open, and roundish. Its Tail is long, and toward the Extremity it is naked or without Hair. Its Hair is long and of a shining black, and is extremely smooth and well laid; under the Chin and a little way down the Throat, the Hair is so long that it hangs down in Form of a Beard; that of the upper half of the Tail, and that of the lower Part of the Legs is brown, none of the rest departs from the general black Colour. These Creatures are found in great Numbers in the Woods, and make a horrible Noise; they assemble in Companies, and are very shy and cunning; they carry their young ones on their Backs till they are able to shift for themselves, and will run very nimbly up Trees with them. This Species of Monkey is very frequent in the *Brasil*, in the Island of *Madagascar*, and in *Borneo*: Great Numbers of them are killed in Hopes of Bezoars, but it is very rare to find a Stone in them.

The People who sell them pretend that they are produced in the Head of this Creature; but the better Accounts agree with Reason, and tell us, that they are produced like all other Bezoars, in the Stomach. The *Indians* pretend, that the Monkey Bezoar is a certain Remedy against all Poisons, and a Cure for Fevers and many other Diseases. And it is in general allowed to be so much superior to the common *Oriental* Bezoar, that it need only be given in a third Part of the Dose. It is not likely to come into the Shops however for Trial.

BEZOAR HYSTRICIS SIVE PEDRO DEL PORCO, *The Porcupine Bezoar.*

This is a Stone of the Number of those which have their Origin in the Bodies of Animals, and which have the Credit of being very famous Medicines.

It is a small Stone of a roundish or oblong Shape. Its usual Size is that of a Hazel Nut, and scarce any have been met with that were larger than Nutmegs. It is sometimes regularly round as a School Boy's Marble, but more frequently it is a little oblong, and sometimes is so abrupt at the Ends, that it appears like a Segment of a Cylinder just rounded a little at the Extremities. Its Surface is not smooth and glossy as that of the Bezoars, but usually has little Irregularities, and often small Cavities in it. Its Colour is a pale whitish with a Cast of green. It is of a lax and friable Texture, and when broken is found to be not so regularly laminated or coated as the Bezoars. Some of them are of an uniformed Substance with no Distinction of Coats at all; but others are composed of various Coats or Crufts, though of an irregular Thickness in their several Parts. It is much lighter than the *Oriental* or *Occidental* Bezoar, and is so soft that it will break with a small Blow. It has no great Smell, unless when perfumed by Art; in Taste is very bitter. It is brought to us from *Malacca* and some other Parts of the *East Indies*, and is so scarce as to sell for a very immoderate Price. Those who are possessed of one will rarely suffer it to be scraped for Use, but usually preserve it whole, keeping it in a little Gold Box pierced full of Holes with a Gold Chain to it, by means of which they can dip it into any Liquor, and take it out again after it has communicated its Flavour and Virtues to it. The Princes of the *East* make Presents of these Stones to the great Men, Natives, and Foreigners, and of those that have come over into *Europe*, most are yet preserved

The PORCUPINE BEZOAR. 853

preserved in such Boxes as are mentioned here. The *Dutch* are very fond of them, and they descend from Father to Son for many Generations.

This Kind of Bezoar was originally call'd *Pedro del Porco*, the Hog Stone, from an Opinion that it was taken from some of the Swine Kind; and the *Malacca Stone* from the Kingdom of *Malacca*, whence it was usually brought. It was afterwards found to be taken from the Porcupine, and call'd Bezoar, *Hystricum*, and *Lapis Hystricis*; others had before call'd it *Lapis Porcinus*; and the Story of its coming out of a Hog had been so well propagated by the *Portuguese*, who call'd it *Piedra de Puerco*, that such Stones as were known to be taken out of Porcupines were esteem'd another Kind of Bezoar; and Authors treated of the *Malacca Stone*, or *Pedro del Porco*, and the *Bezoar Hystricis*, as two different Things; tho' they gave the Name *Lapis Malaccensis* indifferently sometimes to both as coming from that Country. Nothing is more certain however, than that they are but one and the same Thing, and are always taken out of the Porcupine, none such ever having been found in the Swine Kind.

They are bred not in the Stomach as the other Bezoars, but in the Gall-Bladder of the Porcupine, and are properly no other than Gall-Stones, such as we find in the Gall-Bladders of Oxen, and other Creatures, only differing in Colour, ours being not of this greenish Colour, but yellow or brownish.

The Porcupine, the Creature which produces it, is well known for the singularity of the Quills it is cover'd with. It is when full grown as large as a moderate Pig: Its Length, from the Tip of the Nose to the Tail, is about two Feet: The Quills with which its whole Body is cover'd are black; on the Shoulders, Thighs, and Sides, and also on the Belly, on the middle of the Back, the Hips, and Loins, they are variegated with white and pale brown: The Neck is short and thick, the Nose blunt, the Nostrils very large, but not wide open but in Form of Slits: The upper Lip is slit or cleft as in the Hare, and it has a sort of Bristles or Whiskers about the Mouth like those of a Cat: It has two long Teeth in the Front of each Jaw, and in each Jaw eight *Dentes Molares* or Grinders: The Eyes are small, and the Iris blue: The Ears are very like those of the human Species; about these, and under the Chin, there are soft downy Hairs in considerable Abundance: On the Top of the Head, and quite down the Neck, there runs a kind of Crest or Main of Bristles extremely long, not less than seven or eight Inches, reaching quite to the Shoulders; these are partly black, partly white, and partly variegated with both those Colours: The Legs are short, and on the hinder Feet there are five Toes very distinct and evident, the Nails or Claws on which are however not very sharp: The fore Feet have only four Toes each, the exterior of which is largest and resembles a Thumb as in the Bear: The Quills, or Spines, are of two Kinds, some are shorter and are firm and thick, these are sharp pointed, with a double Edge like an Awl; the others are long, weak, and flexible; they are often more than a Foot in Length, and are flatted at the Point: Those of the first Kind are in general white at the Roots, and of a dark Chestnut or blackish Colour higher up: The others are whitish at both Ends, and variegated in the intermediate Part with white and dusky: The Tail is four or five Inches long, and is beset with a large number of Spines which stand in annular Series round it, and at the Extremity of it there are placed ten or twelve tubular Pipes of the Thickness, and much of the Appearance of Spines but shorter; they stand

on a short Pedicle, and are open at the End, and are throughout so thin that they are transparent.

These are the Characters of the Porcupine, agreeing equally to those of *Malacca*, and to the *European* ones, and attributed to both by the different Authors who have described them; the Porcupine of *Malacca* indeed grows to a larger Size than ours, but excepting this there is no other Difference between them. The precious Bezoar, or Gall-Stone, is so seldom found in this Animal; that out of a hundred of them killed and diligently searched for it, not two shall be found to have it; it makes some amends however, that in those which have it there are sometimes two or three Stones found in the same Animal.

The *Indians* have, from Time immemorial, been fond of this Stone as a Remedy against an epidemical Disease in that Part of the World, arising from a distempered Bile; they also esteem it a sort of universal Medicine, and give it against Poisons, and in malignant Fevers. The *Europeans* have been taught by the *Portuguese*, to look on it as a great Medicine in the Small-Pox, and in malignant Fevers, but with how much Reason we shall not be able to determine, till the Stone is more common.

All the Bezoars when thrown into the Fire emit an urinous Smell, and pretty readily calcine. The *Occidental* Bezoar, distill'd in a Retort, yields a very small Portion of an insipid Phlegm; a yet smaller of a Phlegm tinged brownish and loaded with an alkaline Salt; a small Quantity of volatile Salt in a concreted Form, and a little thick and fetid brownish Oil. The *German* Bezoar yields less volatile Salt, but more Phlegm and more Oil; the others are too expensive for Experiments. Upon the whole there must be some Virtue allowed to Bodies that contain these active Principles, but they are in so small Quantity, and so locked up in the stony Matter, that it does not appear they can deserve more than a small Part of the Praises that have been bestowed on them.

CHAPTER II.

MARGARITA, Pearls.

PE A R L S, though esteem'd of the number of Gems by our Jewellers, and highly valued, not only at this Time, but in all Ages, are but a Distemper in the Creature that produces them, analogous to the Bezoars, and other stony Concretions in the several Animals of other Kinds.

The Pearls we meet with in the Shops are of various Kinds, all that are unfit for the Jewellers Purposes coming thither, consequently some of the rough and ill shap'd Pearls, which are gibbous or crooked, or of bad Colours, are at Times met with there, though the generality are what are only too small for working into Toys, &c. and are known by the Name of Seed Pearls, or Ounce Pearls, because of their being sold by the Ounce, not by Tale; these are usually of a round Figure, or nearly so, very small, and of a fine Colour and good Lustre.

The Fish in which these are usually produced is the *East-Indian* Pearl-Oyster, as it is commonly, though not very properly call'd: It is a very large and broad Shell, of the bivalve Kind, sometimes measuring twelve or fourteen
Inches

Inches over, but those of eight Inches are more frequent; it is not very deep; its Colour on the outside is a dusky brown, with some faint Admixture of greenish within; it is of a beautiful white, with Shades of several other Colours as exposed in different Directions to the Light. It is described by Authors under the Name of *Concha margaritifera*, and *Concha mater unionum*. *Lister* has figur'd it under the Name of *Concha margaritifera plerisque, Berberis Antiquis Indis*. Beside this Shell however, there are many others that are found to produce Pearls; the common Oyster often has them, and the Muscle, the *Pinna Marina*, and several other of the *Bivalves* as well as the *Nautilus Græcorum*, and several other of the Shells of other Genera. The Pearls of all these Shells are often very good, but those of the true *Indian Berberi*, or Pearl Oyster, are in general superior to all.

The small or Seed Pearls used in Medicine are vastly the most numerous and common; but as in Diamonds, among the Multitudes of little ones there are smaller Numbers of larger found, so in Pearls there are larger and larger Kinds found, but as they encrease in Size they are proportionally less frequent; and this is one of the great Reasons of their large Price. We have *Scotch* Pearls frequently as big as a Tare, some as big as a large Pea, and some few of the Size of a Horse-bean, but these are usually of a bad Shape, and of little Value in proportion to their Weight.

Philip the Second of *Spain* had a Pearl perfect in its Shape and Colour, and of the Size of a Pigeon's Egg. *De Boot* tells us of one, in the Emperor *Rudolph's* Possession, of thirty Carrats Weight; and *Tavernier* mentions one in *Persia*, for which that Crown paid to the amount of more than a hundred thousand Pound Sterling.

Pearls of such vast Sizes as these are as rare as the great Diamonds, but there are, as among Diamonds, a considerable number, which, though very short of this, are of great Value. The finest, and what is call'd the true Shape of the Pearl is a perfect round; but if Pearls of a considerable Size are of the Shape of a Pear, as is not unfrequently the Case, they are not less valued, as they serve very luckily for Ear-rings, and other Ornaments. Their Colour ought to be a pure white, and this not a dead and lifeless, but a clear and brilliant one; they must be perfectly free from any Foulness, Spot, or Stain, and their Surfaces must be naturally smooth and glossy, for they bring their natural Polish with them, Art being able to do nothing like it for them.

Pearls of whatever Size when they are rough on the Surface, and of irregular Figures, as hollow, flat, or undulated, are of little Value; and they are liable also to be greatly debased by a Tinge of yellow or blue; sometimes also they are found greenish, reddish, or brownish, the two last Stains wholly destroy their Value: As to those which are a little yellowish, the *Orientals* who value Pearls full as much as we do, and will pay as dear for them, don't like them much the worse for a slight Tinge of that Colour, provided they be perfectly bright, and of a fine natural Polish.

All Pearls are form'd of the Matter of the Shell, and consist of a number of Crusts, or Coats, laid with perfect Regularity one over another, in the manner of the several Coats of an Onion, or like the several Strata of the Stones found in the Bladders, or Stomachs of Animals, only that these Crusts in the Pearls are much thinner. They are soluble in acid Menstruums, and if thrown

into the Fire they readily calcine, and in the calcining emit an urinous Smell. They are easily broken, and after Levigation they make an extremely soft and impalpable Powder, which the Ladies, an Age ago, were very fond of as a Cosmetic. It is now talk'd of only as an Ingredient in some of the Shop Compositions; and for the making of what are call'd Pearl Cordials; but for these Purposes it is in general indeed only talk'd of, most of the Apothecaries using levigated Oyfter-Shell under its Name.

It is observed that the whitest Pearls brought into *Europe* damage in wearing; they contract a Yellowness, and become dull and dusky. No Art can recover the Colour or Lustre of the Surface, but there is a Way of taking off the whole outer Coat of the Pearl, in which Case the second Surface, which is bright as the originally external one, appears and lasts in Beauty a long Time, scarce less than the Pearl continued beautiful from the first: This however is a very nice Operation to perform, and at best it diminishes greatly the Value of the Pearl, by taking so much from its Size and Weight. It is reported by People who pretend to have had Experience of it, that the Pearls which have naturally somewhat of a yellowish Cast never alter; that this Tinge never grows deeper, nor the Lustre of the Pearl ever fades. If this be a Fact the *Orientals*, who prefer the Pearls a little yellowish to the perfectly white ones, have great Reason on their Side.

Nothing can be a greater Proof that the Pearl is truly form'd of the Matter of the Shell, than what has been observed by *Reaumur*, of the Pearl Shells of the Coasts of *Provence*: These are in part Pearl colour'd, and in part reddish, and this regularly and unalterably. Pearls are frequently found in these Shells, and it is constantly observed, that the Pearls found in such Parts as correspond to a red Portion of the Shell are of the same reddish Colour, whereas those in the Parts corresponding to the white Portion are white: Nor is this all, for on a strict Enquiry it is found, that these two Portions of the Shell differ, not only in Colour, but in their Structure also. The white Part of the Shell is form'd of plain and regular uniform Plates, or thin Strata; the red Part of Fasciæ, or Bundles of Fibres of a cylindric Figure, arranged closely and regularly together; and the same Difference of Structure is found in the Pearls form'd in the different Parts as they correspond to them, those of the white Part being form'd of Strata, as uniform, as distinct, and regular as the *Oriental* Pearl, but those corresponding to the red Part of the Shell, having their Strata much less distinct, and plainly shewing Fasciæ of Fibres running every Way from their Center to their Circumference. Nothing is more certain than that the Shell of this, and every other Shell Fish, is form'd of a firm and hard Matter, or of a Matter disposed to harden as soon as properly deposited, till which Time it circulates in Vessels in the Animal's Body. It is not wonderful that a Redundance, a Stagnation, or a bursting out of this Matter from the Vessels destin'd to carry it to the Parts of the Shell it should have form'd, should cause these little Concretions, or that when once form'd they should be encreased afterwards in Bulk, by the same sort of Matter being added in small Quantities to them. The little Protuberances like Warts, which we see rising in hæmispherical Figures from the Surfaces of Pearl Shells, and of those of other Kinds, are evidently of the Pearl Kind, only not detached. Our Workmen, when these are of a good Colour and tolerable Size, cut them out, and make something of them

them under the Name of Wens of Pearls. This is somewhat different indeed from the Opinion of *Valentini*, who, on the Credit of one *Kregger*, pretends that Pearls are the Eggs of the Fish which produce them. The Translator of *Geoffroy's Lectures*, who has preserved the Memory of this wild System, says it deserves Confirmation; I suppose he means it wants it. People have been led to believe, from the Name *Unio* given to the Pearls, that there was only one found in each Shell; this is indeed usually the Case in Oysters, and Muscles, though these sometimes vary from it, but in the *Oriental* Pearl Shells six or eight are frequent in each; some have been found with twenty or more in them, but where they are numerous the greater Part are generally small.

This valuable Article of Commerce is not the Product of any peculiar Part of the World. The *East-Indies* and *America* produce the Pearl Shell Fish abundantly, and it is found with good Pearls in it in many Parts of *Europe*.

The Coasts of the Island *Ceylon* afford Pearls superior to those of all the *East*, in the Beauty of their Colour, but there are no very large ones found there. The *Persian* Gulf abounds with the Pearl Fish, and Fisheries are established on the Coasts of the several Islands in it, and particularly on those of the Island of *Baharem*, or as it is usually spoke, *Babren*. In *America* there are Fisheries, in the Gulph of *Mexico*, and along the Coast of the *Terra Firma*, all which yield very considerable Advantage. The *European* Pearls are principally found on the Coasts of *Scotland*, and the neighbouring Parts; but there is little Prospect of any thing considerable being ever gained by them.

The Antients were well acquainted with Pearls, and held them in great Esteem. We are told of *Cleopatra's* possessing one worth fourscore thousand Pounds of our Money; and in general they held the Pearl next in Value to the Diamond. They had a thousand fanciful Stories on Foot as to the Origin of this precious Substance, but the most prevalent was, that it was a concreted Drop of Dew. They imagined, that at a certain Time of the Year the Pearl Fish rose from the Bottom to the Surface of the Water, and there took in a Drop of Dew which concreted into a Pearl in its Body. The more fanciful of them were not content that this should be a Drop of common Dew, but made it a peculiar Kind shed from the Stars in calm Nights.

Humor, ille quem serenis astra sudant noctibus.

It is easy to see how much Respect ought to be paid to so wretched an Hypothesis; it being about as philosophical to suppose a Star shedding down to the Earth a Drop of Dew, as a Fish fix'd by its Shell to the Rocks, leaving that Situation and advancing its heavy Shell up to the Surface of the Water, just when it should chance to fall, in order to receive it. 'Tis something odd, that the very Authors who tell us of the Pearl Shells lying so deep in the Sea, that the Divers were forced to descend twenty Fathom for them, and growing so fast to the Rocks that they were obliged to take Instruments down with them to get them loose, should persuade themselves that they got loose and came up at Pleasure. They also imagined that great Rains, and particularly Thunder Storms, were very instrumental in producing Pearls.

The *Greeks* rank'd them among the Stones, and call'd them *Lapis Margarita*. Great Praises have been given to Pearls as Cordials, and Sudorifics, but without any great Foundation; they seem indeed mere alkaline Absorbents, and as good as Crabs Eyes, or Oyster-Shells, but not better.

CHAPTER III.

OCULI CANCRORUM,

Crabs Eyes.

TH E Bodies kept in the Shops under the Title of Crabs Eyes, and which the prevailing Custom makes it necessary to retain them under, in a History of Drugs, have no kind of Right to that Name: They are neither the Eyes of any Creature, nor do they belong to the Crab, but to another of the crustaceous Animals.

They are small whitish Bodies, in Size from the Bigness of a Pea to that of the largest Horse-bean: They are rounded on one Side, and depress'd and sinuated on the other: They are considerably heavy, moderately hard, and without Smell: Their Taste is that of other Parts of the testaceous Matter of the Animal that produces them.

This Animal is not of the Crab Kind, though of the same Class of testaceous Creatures: It is the common Craw-Fish: The large Sea Craw-Fish also affords them; and the Stones are so far from being properly Eyes, that they are bred in the Creature in two separate Bags, one on each Side of the Stomach. Every Craw-Fish will be found to have them in these Bags at all Times, except in the Month of *July*, and Part of those of *June* and *August*: This is the Season at which the Creature casts its Shell, and at this Season only the Stones are not found in their Places. The Shell is not the only Part they change on this occasion; the very Stomach submits to the same Fate, and is consumed and digested by a new one growing in its Place: As soon as this is compleatly form'd a milky Juice is secreted in the new Bags, and from this new Stones, or what we call Crabs Eyes, are soon after form'd.

We have them from *Holland*, they are brought also from *Muscovy*, *Poland*, *Denmark*, *Sweden*, and many other Places: What we have are some of them probably taken out of the Bodies of the Animals, but the far greater Part are picked up on the Shores of the *Baltick*, and of other Seas and large Rivers.

They are alkaline and absorbent, and in some Degree diuretic: They are sometimes prescribed singly, and are an Ingredient in many of the officinal Compositions.

Natural Productions of Animals

Used in MEDICINE.

CLASS the SECOND.

SOFTER CONCRETIONS.

OF these we have only two Kinds, the one named somewhat too pompously, the other more properly, with the Name of the Animal it is produced in the Stomach of ; they are

1. The GERMAN BEZOAR.

2. The PILA CERVINA.

CHAPTER I.

BEZOAR GERMANICUM,
German Bezoar.

THE *German Bezoar* is a Substance so far indeed of the Nature of the other Bezoars, that it is found in the Stomach of an Animal, but in all other Respects it differs extremely from them. It is always of a roundish or oval Figure, frequently very regularly round. Its Size is various, but that of a large Walnut is the most common. Its Surface is tolerably smooth, and somewhat glossy, but it has nothing of the stony Look of the other Bezoars, any more than of their stony Nature: It is very light and not easily broken, though it is not so properly hard as tough: When cut asunder, for it is not easily broken, it is found to be composed of a large Nucleus, surrounded only by two Crufts, the Nucleus is of a moderately compact Texture, and of an irregularly fibrous Structure. It appears to be form'd sometimes of Hairs licked off from the Body of the Animal, and sometimes of the hard and undigested Fibres of Plants which the Creature had fed on, and which not passing off from the Stomach, had been roll'd together into a roundish Figure, and united into one Mass by a viscous or mucous Liquid ; over these is laid a thin Coat of a firm and tough but not stony Matter, of a dark and almost blackish Colour ; and over this a somewhat thicker, of a paler or greyish Colour, but still with something of the blackish in it, both more or less full of Hairs, and form'd of an indurated viscous Matter. These are both of a tough and firm Substance like very hard Leather, or of a Texture between that of Leather and Wood ; the whole has generally a polished Look, and dark Colour on the outside, and has very little Smell, but a disagreeable Taste, nothing like that of the Bezoars.

The Creature in whose Stomach this is found is of the Goat Kind, and is described by all the Authors, who have treated of Animals, under

860 The BALL from a DEER'S STOMACH.

the Name of the *Rupicapra*, or the *Chamois*. This Creature is of the Size of the common Deer : Its Legs are very long, and are cover'd with very short Hair : The Hair of the Back is likewise very short, it grows longer on the Sides, and on the Belly ; and about the Thighs, where it is longest of all, is near four Inches and a half in Length. The Coat is properly of two Kinds, for beside the long and shining Hair which appears, there is close to the Skin a fine and short Hair, or Down, like that of the Beaver ; this is under the long Hair every where, except on the Head, the Legs, and under the Belly ; the other Hair, in Places where it is longest, is a little curl'd.

The Back, the Flanks, the upper Part of the Head, and Part of the Breast, are of a brownish Colour, with a faint Cast of reddish, and a Circle of the same Colour running from the Ears to the Nose, and surrounding the Eyes : The rest of the Coat of the Animal is of a dirty white, in some Places with a Cast of brown, in others of reddish in it. The Tail is short, not more than three Inches in Length : The Ears are about five Inches long, and have an Edge of white Hair within ; on the outside they are brown, and the Hair short : The Eyes are remarkably large and bright, and the upper Lip is split or cleft, somewhat in the manner of that of the Hare.

The Horns are common both to the Male and Female ; they are placed on the Forehead a little above the Eyes ; they are black, and are mark'd with circular Rifings, not twisted spirally as in most others of this Class ; they are about six Inches long, and are strait a great Part of the Way, but at the End they are form'd into a Hook : Their Surface is not perfectly smooth, but has some longitudinal Wrinkles or Furrows ; they are hollow, but the Vacuity is fill'd up with a solid Substance growing from the Skull. The Feet are cloven, and the Hoofs not fill'd up with Flesh but hollow in part. It is a very nimble Creature, and leaps very boldly from Rock to Rock. The Balls call'd *Ægragropili*, or *German Bezoars*, are not unfrequently found in the Stomach. The Name of Bezoar has been given to them partly for their being found in this Part, but more from their Virtues, which are pretended to equal if not to excel those of the *Oriental Bezoar*. They are said to be a great Medicine in malignant Fevers, and in the Plague, and have the Credit of resisting Poisons. They are in use in the *German Shops*, but in ours they are scarce known.

CHAPTER II.

PILA CERVINA,

The Ball from a Deer's Stomach.

THIS is another Substance obtained from an Animal, and rank'd among the Number of Medicines, though with no better Reason than the former, both being call'd Cordials, and Resisters of Poison, but neither having the least Title to any real Praise of this Kind.

The *Pila Cervina* is of the Nature of what has been already described under the Name of the *German Bezoar*, a Ball of hairy and other Matter form'd in the Stomach of the Animal.

It is met with of various Sizes, usually of a roundish or oval Form, and sometimes flatted, the bigness of a Hen's Egg is the most frequent Standard as to

to Magnitude, but they have been found larger than a Man's Fist. This Ball is very light; its Surface is usually smooth and uniform, often very glossy, and has something the Appearance of Leather; it is too tough to break with a Blow, but may be cut with a Knife; and is, when cut, found to be composed of a Congeries of Hairs, and of the Fibres of Vegetables form'd into a Ball by the Motion of the Stomach, and cover'd with a thin, blackish, and smooth Coat, form'd of the Mucus of the Stomach, though it is often without this, appearing hairy even on the Surface. We find in the Stomachs of Oxen Balls of Hair of this Kind, often of a very great Bigness; these are indeed composed only of Hair, but those of the Deer Kind have vegetable Matter among them. The first Rudiments of these Balls are doubtless form'd by the Creature's licking Hair off several Parts of its Body, and this getting down into the Stomach, is there roll'd up into a sort of Ball and acquires new Matter continually from fresh Additions of Hair swallowed in the same manner, and from the Fibres of Plants too hard for Digestion, which mix intimately with it. What Virtue such a Bundle of Hair and woody Fibres of Plants, left after all the digestible Matter is carried off, can have as Medicines, is very easily determined.

Natural Productions of Animals

Used in M E D I C I N E.

C L A S S the T H I R D.

SECRETED JUICES.

TH E S E are a Class of Medicines, though not very numerous, yet most of them of very great Power. We have four of them in Use.

- | | | | |
|----------|-----------|------------|-----------------|
| 1. MUSK. | 2. CIVET. | 3. CASTOR. | 4. GOATS BLOOD. |
|----------|-----------|------------|-----------------|

C H A P T E R I.

Moschus,
Musk.

MUSK is a dry, light, and friable Substance; of a dark blackish Colour, with some Tinge of a purplish, or Blood Colour in it. We meet with it in Masses, or loose and friable Granules, which are soft to the Touch, and easily crumble between the Fingers, feeling somewhat smooth or unctuous: Its Smell is highly perfumed, too strong indeed to be agreeable in any large Quantity: Its Taste is bitterish.

It is brought to us sewed up in a Kind of Bladders or Cases of Skin of the Bigness of a Pigeon's Egg or more, each containing from two or three Drams to an Ounce of Musk. These are covered with a brownish Hair, and are the real Capsules in which the Musk is lodged while on the Animal.

There is scarce any Drug so liable to be sophisticated as Musk: Almost all that we meet with is so; but a nice Observer will soon find which is least so. The *Indians* adulterate it on the Spot with Blood, which drying among it, becomes much of its Colour, and acquires so strong a Scent from it, that it may pass alone for Musk with many People. Sometimes also they mix a blackish friable Earth with it; after it comes into *Europe*, there are People also who know so well how to adulterate it, that they will give as much for an Ounce of Musk, which they know to be genuine, as they will sell a Quarter of a Pound for.

That which is adulterated with Blood, is distinguished by its having many hard Lumps or Clots in it; for the Blood dries to a harder and firmer Substance than the genuine Musk; and that which has Earth among it, is of a more crumbly Texture than the genuine Musk, and harsher to the Touch, as well as heavier: This may also be discovered by burning a small Quantity of it, in which Case it leaves a large and heavy Remainder; whereas the genuine Musk, or even that adulterated with Blood, leaves only a little white Ashes. It is to be chosen of a very strong Scent, and in dry and sound Bladders, and such as are the natural Bags of the Animal, not such as are made of Pieces of the Skin sewed together, which will easily be distinguished by the Length and Closeness of the Hair, those of the counterfeit Kind having much more Hair on them than the true, and that longer, and often of a paler Colour.

Musk is brought to us only from the *East-Indies*; the greatest Quantity of it is from the Kingdom of *Bantam*, some from *Tonquin* and *Cochin China*.

The Animal which produces it is of a very singular Kind, not agreeing with any established Genus: Some have made it a Goat, others a Deer; but it evidently belongs to neither Genus. *Charlton* calls it *Capra Mosel*, *aliis Cervus odoratus*, *Aldrovand* *Capra Moschus*: And *Ray*, in his Synopsis of the Quadrupeds, *Animal Moschiferum*, ranking it among some others which he calls anomalous ones. It is of the Size of the common Goat but taller. Its Head is long and not very thick, its Neck short, its Snout very sharp, in some Degree resembling that of our Greyhounds. Its Ears resemble those of the Rabbit; they are three Inches long, and stand erect. Its Tail is also erect, but very short, not exceeding two Inches. Its Legs are moderately long, its Hoofs cloven very deeply into two anterior Hoofs, which are an Inch and a Quarter or thereabout in Length, and very narrow, and two Heels. The Hair on the Head and Legs is about half an Inch long; on the Belly it is an Inch and half and something thicker than the other; that on the Back and Hips is thickest of all; it is indeed thicker than that of almost any other Animal, and is at least three Inches long; it is variegated with a dusky brown, with some faint Cast of reddish in it, and white, every Hair being part coloured with one, part with the other in several Divisions between the Root and the Extremity. The Hair on the Head and Legs however is altogether brown, and that on the Belly and under the Tail white; and the Hair on the Back and under the Belly is very prettily undulated, and that of the Belly is very soft and flexi-

Musk is less heating than Castor; & altho' y^e Smell of it is offensive to many, yet I scarce ever found it disagree wth Stomach. it is chiefly useful in *Spasmodic* Disorders, Riccough, Cramps & other spasmodic disorders. 2 or 3 Grains of it rubbed wth Sugar mixed wth a Spoonful & a half of Mint Water, will sometimes stop the Vomiting occasioned by teething in Children. *Whys* on Nervous Disorders p. 37

ble and very light: On each Side of the lower Jaw, near the Angle of the Mouth, there grows a singular and remarkable Tuft of Hairs, which are about three Quarters of an Inch long, and are very thick and rigid. The Bag which contains the Musk is three Inches long and two wide. It protuberates near three Quarters of an Inch from the Level of the Belly under which it grows.

The Creature has in the whole twenty-six Teeth, sixteen in the lower Jaw, the eight *Incisorii* which are small, and on each Side there are four Molares or Grinders. The upper Jaw has a like Number of Grinders but no *Incisorii*; at about three Quarters of an Inch however from the Extremity of the Mouth there stands in each Side a Tusk. These are two Inches and a half long, and of a hooked Figure, bending backward; they terminate in a sharp Point, not rounded but flatted into an Edge behind, so as to resemble a Sickle. These serve as offensive Weapons in fighting, and also to a much more necessary Purpose, that of feeding; for by means of these, which are hooked and edged like a Sickle, it can either dig up Roots out of the Ground, or take off the Branches of Trees within its Reach; or finally, it can by their means very readily rip up the Bark of Trees and Shrubs, and take it off for Food.

The Bag which contains the Musk is situated in the lower Part of the Creature's Belly. It consists of a thin Membrane covered thinly with Hair. It resembles a small Purse. The *Indians* kill the Creature for the Sake of this precious Perfume, but they also eat its Flesh, which is well tasted, and of good Nourishment. The Bags of Musk, when genuine, are so strongly scented, that they offend the Head greatly on smelling to them. The Cavity within this Bag, in which the Musk is contained, is about three Quarters of an Inch long, and a little more than half an Inch wide, in a moderate Bag: The whole external Substance is membranous rather than fleshy, and its Aperture is guarded by a sphincter Muscle; the inner Membrane, which immediately surrounds and encloses the Musk, is all over full of Blood-Vessels, and toward the Orifice of the Bag there are several Glands distinguishable in it, which serve for the Secretion of this precious Perfume.

In hard Winters the Animal leaves its natural Abodes in the Forests, and comes down into the Rice Fields and other cultivated Places. They come in vast Numbers at this Time, and are so feeble with Hunger, that they are easily taken or destroyed in very great Numbers, as indeed had need be the Case, each Animal having only one Bag of Perfume; and yet so vast a Quantity of it being annually consumed as well in the *East* as in *Europe*.

Musk is to be kept close shut down in a leaden Box; by this means it will retain its Smell, and will not grow too dry. The Smell is always disagreeable when a large Quantity of it is under the Nose at once; but a few Grains of Musk mixed with any other Substances, give them an agreeable Smell, and such as offends very few People.

The *Orientals* use a great deal more of this Perfume than we do. It has a long Time been disused in Medicine in our Part of the World, tho' acknowledged an excellent Cordial and Sudorific, but it is apt to disagree with Women subject to hysteric Complaints, and with many others, to whom all Perfumes are naturally offensive. This had occasioned its being out of use a great while, but of late some Accounts having been brought us, of the great Effects of
large

large Doses of Musk in the *East Indies*, we have got into the Use of it again, and instead of Doses of a Grain or two, as we used to give it, imitate the *Orientals*, and give fifteen Grains or more at a Dose, and that with great Success in Fevers of the most dangerous Kind, and particularly in those attended with Convulsions, Hiccoughs, and the like Symptoms.

CHAPTER III.

ZIBETHUM,

Civet.

CI V E T is a soft and unctuous Matter, very different in Colour according to the different Parts of the World it is brought from, but easily distinguishable from all other Things in the World by its Smell. It is, when finest of all, of a pure, lively, whitish Colour; but this in keeping will grow yellow on the Surface, and is in this Case less valuable, as it always loses a great deal of its volatile Parts with its white Colour. We meet with a Civet very different from this in Colour, but of the same Smell and Consistence. This is brought from the *Brazils*, and is of a strong brown with some Cast of reddish. There is some from *Guinea*, which is yet darker than this, and finally we have from the *East Indies* a black Kind, which is least valuable of all.

All Civet, however different in Colour, is soft, fattish, and unctuous to the Touch. Its Taste is somewhat pungent and bitterish. Its Smell is plainly enough of the perfume Kind: When alone, and in any Quantity, it is very disagreeable, but when mixed with other Ingredients in a very small Quantity, it gives them a very highly perfumed Scent.

All Drugs, of so considerable Price as Civet, are subject to great Adulteration, and this, like Musk, being a thing in itself so strongly scented, that it will bear a great Admixture of a Body wholly scentless, without discovering it to the Smell; nay, and give it so much of its own Scent as to make it pass for itself in that respect; it is no wonder that we find it frequently sophisticated. The white Civet is much the most likely to be genuine, for what are called the *Guinea* and *Indian* Kinds are frequently no other than Compositions of white Civet, with a large Mixture of Honey and some colouring Ingredients.

Civet should be chosen new, and of the same Colour on the Surface as within, of a moderate Consistence, not too soft nor too dry; the former generally bespeaking its being adulterated, the latter its being decayed. It should be of an extremely strong and disagreeable Smell.

Civet is produced in the manner of Musk, in Bags growing from the lower Part of the Belly of an Animal. The Creature which produces it is generally called a Cat, but it is properly not of the Cat, but of the Wolf or Fox Kind. It is described by *French* Academicians, who have very carefully dissected it, under the Name of *Catus Zibeticus*, and by *Ray* and others, under that of *Animal Zibeticum*. It is singular in this Animal, that externally there is no Mark of the Distinction of Sex. All of them appear to the Eye to be Females. The Civet Bag is placed where the Parts of Generation are expected to be found, and it has an oblong Aperture much resembling that of the female Part
of

Mixed wth Linabar is recommended for y^e Bile of a Mad Dog.

of Generation in Quadrupeds, and gives both the Male and Female an Appearance of that Sex. The Male has no external Appearance of Parts of Generation to discountenance this erroneous Supposition, the Penis being lodged within, not appearing externally. The Creature from its Nose, to the joining on of the Tail, measures about two Feet and a half; the Tail is about seven or eight Inches long. The Legs are short, the fore Legs not more than five Inches long; the hinder ones are somewhat longer. The Feet, as well the hinder as the fore ones, are each divided into five Toes, the innermost of which is the smallest, as in the Bear; but this little Toe does not touch the Ground in walking: Beside these there is a little Heel with its Claw in the same manner as those of the rest of the Toes.

The Claws are black, not much crooked nor sharp at the Points, and the Sole of the Foot is covered with a tender Skin. The Ears resemble in Bigness those of a Cat, but they are less pointed at the Tops. Beside the Ears, there is nothing about the Head that has the least Resemblance of a Cat, except that it has Whiskers, but these are common to all the carnivorous Animals. The Head is not short like that of a Cat, but long and narrow, and the Snout pointed; the Tongue is soft, the Eyes are black and small.

The Head and Legs are covered with a very short Hair, but all the other Parts of the Body with a very long Kind, being on the Back, where longest, not less than four Inches and a half. This long Hair is harsh, rigid and strait, but at the Roots of it there grows a great Quantity of a short and fine Hair or Fur, like that of the Beaver. This is of a greyish brown Colour, but the long Hair is of three Colours, and by the Arrangement of these, forms three Lines or Rows of Spots, the one black, the other white, and the third of a reddish brown.

Some of the Hairs indeed vary a little from this, and are blackish in the middle, and whitish at the Root, and at the other Extremity. The Legs, the Belly, and the lower Part of the Breast are black: This is singular in this Creature, most other Animals having the Hair under the Belly, and on this Part of the Breast, if different in Colour from the rest, either white or paler than the rest, not darker. The Sides are variegated with Lines and Spots; there are three Colours in the Variegation, black, white and brownish, but the black makes much the greater Part. The greater Part of the Head is whitish, but the Nose is black, and there are two large Spots of black on the Side surrounding the Eyes. The upper Part of the Head, or that Part between the Eyes and the Ears is grey; it is rendered so by a Mixture of black and white in every Hair, the Bottom of each being black and the upper Part white. The Ears are black on the outside, and edged with a slender Rim of white; within they are full of long white Hairs. The Neck, which is thick and very strong, is white, but the greater Part of it is taken up by four broad Streaks of black, not running transversely, but obliquely from the Ears down toward the Stomach. The Middle of the Back has three broad Lines, the central one black, the other two brownish. On the other Parts of the Body there are several of those roundish Spots, which the Ancients called Eyes on the Leopard, *Ἰνδ*. But they are few of them single, they generally run into one another, and form a Sort of undulated Lines or Streaks. The Tail is blackish on the upper Part, and whitish on the lower.

The opening of the Bag which contains the Civet is below the Anus; the Bag itself is indeed situated between the Anus and another small Opening. It

is however much nearer the Anus than this Opening which is two Inches and a half above. The Bag is about three Inches long, and near two and a half broad; its Opening, which is a long Slit, reaching within a Quarter of an Inch of each Extremity, is surrounded every way with a very short Hair which curls inward; on opening the Slit wider by drawing aside the Lips of it, the inner Cavity of the Bag is discovered, which is large enough to hold a Hen's Egg. In the Bottom of this Cavity there are two Apertures, each capable of admitting a Man's Finger, these lead into two little Cavities, the inner Membrane of which is not smooth, but covered with small Eminences, each of which has an Opening in its Center, and when pressed, the Civet or Perfume is seen ouzing in small Drops out of these little Apertures, and bedewing the whole Inside of these little Cavities. These Cavities are surrounded by a double Membrane, between the Duplicature of which are placed a vast Number of Glands; in these the Civet is formed, and it is exsuded from the little Apertures of the Tops of the Prominences of the inner Skin, which are indeed the Apertures of these several Glands. The Civet as it is pressed out of these is white and frothy, but it soon becomes more dense, and loses its white Colour.

The Civet Animal of either Sex has the same Aperture described before, as situated two Inches and a half below the Bag of Perfume: In the Male this is the Entrance into a Cavity or Canal in which the Penis is lodged: In the Female it is the Orifice that leads to the Neck of the Womb. Both the Sexes having the Perfume Bag, which by its opening carries much the Resemblance of the female Part of Generation, and both having these little Holes alike below it, there is no way of distinguishing the Male from the Female by mere Inspection. This Orifice in the Female, has indeed two little oblong Protuberances over it, and a third smaller between them, which last appears to be the Clitoris.

There may be perceived under the Skin of the lower Part of the Belly, two long and hard Protuberances, running from the Navel to the *Os Pubis*. These are four Inches long and about an Inch in Thickness, and through them run the Branches of the hypogastric Veins and Arteries, which carry to the two Sacculi, which form the Perfume Bag the Blood loaded with that Matter which is to be the Perfume when elaborated in those Glands. It is observable that the Vessels here mentioned are very large in the Male, whereas in the Female they are so small that it requires a close Inspection to distinguish them. The Civet of the male Animal also is found to smell much stronger than that of the Female: This is a Fact sufficiently ascertained by the Academicians of *Paris*, who dissected a male and female Civet Animal together, and carefully observed it; though the Generality of Authors say just the contrary, and *Quadramius*, who pretends to be very accurate on the Subject, says, that the Civet of the Male is worth nothing if some of that of the Female be not mixed with it. Another Observation of these Gentlemen is, that the Civet does not improve in its Smell by keeping. Authors have even asserted as that it was a horrible Stink when taken out of the Bag, and that it acquired all its Perfume after keeping some Months. *Amatus Lusitanus* is among the Number of these: But these Gentlemen declare that the Civet did not stink any more on first taking out of the Bag, than at any other Time, and that it smelt after a Year, exactly as it did when they first put it up: The whole Coat of the Civet Animal, particularly that of the Male, is perfumed; on only stroaking the Skin the Hand

will have a fine Civet Scent, not so strong as to be disagreeable, which it will retain a long time. If the Creature has been using any Exercise, this Scent of his Coat is the stronger, and it is in this Case particularly strong under the Breast and about the Neck, where the Creature sweats most. This has been supposed by the *French* Academicians to favour the Opinion of *Scaliger*, *Matthiolus*, and some others, who declare the Perfume of the Civet to be only the Sweat of the Animal, which is collected in greater Quantity, and retained longer in the peculiar Bag appropriated for the containing it, than elsewhere. It seems more probable however, that the Perfume is destined peculiarly to this Part, but that the Sweat of the Animal may be also more or less impregnated with a Matter of the same Kind, which as we know the Blood of the Animal contains the Original Matter of it may be also secreted, though in smaller Quantities, by certain other Glands placed about the Neck and elsewhere.

It is a Subject of great Dispute, whether the Civet Animal was, or was not, known to the Ancients; that it was not known by this Name is evident; but it appears by other Marks that it was known to them, and was the Creature which they called the Hyæna. *Bellonius* has taken great Pains to prove this, and has succeeded very well in the Attempt. We are to observe indeed that the fabulous Writers of those Ages have recounted things of the Creature that they call the Hyæna, which can be true of no Animal in the World; such as its rendering Dogs dumb only by its Shadow, an Absurdity recorded by *Aristotle* and *Ælian*; its imitating the human Voice, and by that means drawing People into Places where it devoured them and the like, recorded by *Pliny*: Setting aside these, and such other Stories, which could have their Rise only in the Credulity of the Writers, and their Love of relating marvelous Things; there is no Property of their Hyæna which our Civet Animal does not come up to more than any other Creature, and indeed which some Singularity may not be found in it to give rise to. *Pliny* tells us, that precious Stones called *Lapides Hyæniæ* were taken out of its Eyes, and the Academicians of *Paris*, in their Dissection, found that the Crystalline of the Eye was of an uncommon and very remarkable Hardness: He tells us also that the Hyæna had no Vertebrae in the Neck, but that this was all one rigid and immoveable Bone; this was as plainly an Exaggeration of Fact as the former; but there is the same Sort of Foundation for the Fancy of a Writer who loves to make things miraculous in this Case as in the former; for our Civet Animal has the Muscles of the Neck vastly thicker, and the Ligaments stronger and more rigid than in any other Animal. Its Neck therefore is the most firm and immoveable of that of all Animals, and *Bartholin*, who dissected one of them, though he had no Analogy of this kind in his View, affirms, that he found the Ligaments not only more strong, but more numerous, than in other Animals.

The Description the Ancients have given us of the Figure and Shape of their Hyæna, is principally comprised in three Articles; they tell us that its Head was like that of a Wolf, that it had long and rigid Hair on the Back, and a peculiar Aperture not found in other Animals situated below the Junction of the Tail, beside the two Apertures found in all other female Animals in that Part of the Body. *Aristotle* is so particular in his Description of this singular Aperture in the Hyæna, that he says it resembles the Opening of the Parts of Generation in the Females of our own Species: This is evidently and obviously

true of this peculiar Part of the Civet Cat, and cannot be said with tolerable Justice of any other Creature in the World; and the rest of their Description agreeing perfectly with our Civet Cat, and even their false Miracles in its Structure having evidently something to give them Rise in the Formation and Parts of this Animal; there remains surely very little Room to doubt but that it was the very Creature. The only thing that makes against it is, that they have no where mentioned their Hyæna carrying a Perfume about it. The only Creature they tell us off as perfumed is the Panther; they say that every Part of this Creature had a perfumed Smell, but particularly its Skin. This is not exactly the Case with our Civet Cat, because its Perfume Bag is evidently the Part of most Scent; there are not wanting however some, who suppose our Civet Cat to have been the Creature they mention under the Name of the Panther: But the Descriptions they have left us of the Panther, do not at all agree with our Civet Cat; and as those of the Hyæna of their Times perfectly agree with this Animal, and can be made to agree with no other, there seems little Cause for doubting that they meant it, from the Want of one Article in the Description.

If *Aristotle* or *Pliny* had seen the Animal themselves, they would never have passed over so remarkable a Particular in Silence; but if, as is most probable, they received their Accounts from others, it is very possible this might be forgot, especially as to many People the Smell is rather disagreeable than pleasant, rather a Stink than a Perfume.

Civet chemically analysed, yields a moderate Quantity of an insipid but strongly perfumed Phlegm, a little reddish and pungent Phlegm, a large Portion of a thin reddish Oil, less sweet than the Civet itself, and a large Share of a volatile Salt. It has been greatly esteemed in Medicine, as a Cordial, Sudorific, and Resister of Poisons. Some have used to apply it to Childrens Navels to cure Fits, and it was a long time famous externally applied to the Pudenda of Women in hysteric Cases; but this last Practice has been found not only ineffectual as to giving Relief, but hurtful, and is wholly laid aside, as is indeed all Use of Civet in the medicinal Way. It is at present an Article wholly belonging to the Perfumers.

CHAPTER IV.

CASTOREUM,

Castor.

CASTOR, though by many mistaken for the Testicles of the Animal that produces it, is truly a peculiar secreted Matter contained in Bags destined to receive it in the Manner of the Musk and Civet, though situated differently in the Animal.

Castor is an indurated Substance, formed of a Matter once fluid, the thinner Part of which has been evaporated in drying. It is a light and friable Matter, of a moderately lax Texture, and of a deep dusky brown Colour. It is of a somewhat acrid and bitterish Taste, and of a strong, and to many People, very disagreeable Smell. It is brought to us in the Bags which naturally contained it while in the Animal: And these so much resemble the Testicles of

n Animal both in their dry State, and when on the Body of the Creatures, that we are not to wonder People who had not examined their Situation on the Animal really took them for such. These Bags are always joined two together ; they are equal in Size, and are of an oblong Form ; they are placed Side by Side in their natural Situation in one Bag, which contains them both. This Bag is sometimes sent over to us with them, but much oftener they are sent without it, the Custom of the People who sell it to the Merchants, being to take out the two Bags from this common Membrane, and hang them up in a Chimney to dry. In which Operation they acquire the brown Colour we see them of, their original one being a pale flesh Colour.

The Animal which affords us the Castor is one of the *Leporinum Genus* of Ray. It is described by all the Authors who have treated of Animals under the Name of *Castor* and *Fiber*, and is frequent in the *East* and *West Indies*, and in *Poland*, *Russia*, and many other of the *Northern* Parts of the World. It is observable however that tho' this Creature is so common, and has been so well known to all Ages, Authors have been very deficient in its Description ; and it is but lately that the World has been informed of the true Structure of its Parts. The Ancients have said very little of it, and the Moderns, though they have written very largely of it, have employed themselves about its Way of Life, its Sagacity, &c. and have neglected the Examination of the Structure of its Body.

The Castor or Beaver is an amphibious Animal. It much resembles our Otter in Shape, but it is larger, a moderately fat one at its full Growth, weighing between thirty and forty Pounds. Its Length from the End of the Nose to the Extremity of the Tail is about three Feet, and its Breadth in the widest Part about one Foot. The Body of the Beaver is covered with two Kinds of Hair very different one from the other, both in Length, Thickness and Colour.

The long Hair, which is what offers itself the most immediately to View, is about an Inch and half long, and as thick as that of our Deer ; this is of a dark, but very glossy brown Colour, and so solid that when cut asunder there is not the least Cavity to be distinguished in it, not even with the Assistance of a magnifying Glass. The other Hair is not much less than an Inch long ; it is much closer set than this, and is so soft and fine, that the purest Down cannot be more so. Many of the other Quadrupeds have two Kinds of Hair in this manner, but the under Hair is in none so fine as in the Beaver.

The Head of this Creature is about five Inches and a half in Length, and near five Inches broad in the largest Part. *Herodotus* places the Beaver, for this Reason, among those which he calls *Tetragonoscapa*, or square faced ones.

The Ears are round and very short like those of the Otter, they are well covered with Hair on the outside, but in a manner naked within.

It has two very large and strong Teeth in the Front of each Jaw, which qualify it very well for gnawing Trees, &c. as we are told it does. The under ones are an Inch or more in Length, the upper ones a little shorter ; they are all rounded on the outer Part, and sharpened at the Top into a very even and durable Edge. They are white on the Inside like the Teeth of other Animals, but on the outer Part they are yellow or Orange coloured ; its other Teeth are sixteen in Number, four above and four below on each Side of the Mouth.

The Structure of the Feet of the Beaver is very extraordinary, and shews that Nature destined the Creature to live in the Water as well as on Land, the hinder

der ones being much better fitted for swimming than for walking, though together with the others calculated more particularly for walking, they answer that Purpose very well. The five Toes, into which each of the hinder Feet is divided, are connected together by a Membrane, resembling that of the Foot of a Goose, or other Water-Fowl: The fore Feet have no such Web, and consequently the Toes which are loose, as in other Creatures, are of great Use to this Animal on all Occasions, particularly for holding and turning its Work; it also holds its Food in them, eating in the manner of the Squirrel: They resemble in some Degree the Fingers of the human Hand. The Antients, careless as they were about the Figure of this Animal, did not omit this Observation; they resembled the whole fore Foot to that of the Monkey. *Matthiolus* contradicts this Observation of the Antients, but not much to his own Credit; 'tis evident the confounds the fore Feet of the Beaver with those of the Otter, which are indeed web'd in the same manner with those behind, the Otter being destin'd to spend more of his Time in the Water than the Beaver, and feeding in a very different manner. *Matthiolus* seems to have been led into this Error by *Pliny*, who says expressly, though very erroneously, that the Otter and the Beaver are alike in all things except the Tail. The fore Feet of the Beaver are about six Inches long, the hinder ones much longer; the Nails are flat and hollow'd, and beside the five Toes, each of the hind and fore Feet has on its outside a little Eminence form'd by a Bone, which if detached would make a sort of sixth Toe, but as it is fix'd seems to serve only to give the Foot a greater Power of moving, and a firmer rest when down.

The most singular Part however of this Animal is its Tail, this is not at all like the rest of the Body, and looks as if it were more of the Nature of a Fish than any Part of a Quadruped: It is cover'd with thick-set Scales, connected together by an Epidermis into which they are inserted; these are small, of a sort of hexagonal Figure, and of the Thickness of common Parchment: The under Part of the Tail has a few short Hairs between the Scales, the upper Part has none: The Scales are of a greyish brown, or sort of Slate Colour; and the Skin which connects them together is of the same sort of Colour, only somewhat darker. When the Scales of the Tail are rubb'd off the Marks of them remain, and the Substance of the whole is fleshy, and cuts much like the Flesh of the larger Fishes: It is near a Foot long, and four Inches broad at the Insertion, from whence it becomes gradually wider to the Middle, where it is five Inches, and thence gradually diminishes again in Breadth to the Extremity, where it terminates in an oval Figure: It is about two Inches thick at the Root, and from thence gradually diminishes to the Extremity, where it is little more than half an Inch in Thickness: The Edges are rounded all the Way. The Aperture, by which this Creature discharges its Excrements, is situated between the Tail and the *Os Pubis*, it is two Inches above the Insertion of the Tail, and is of an oval Figure, three quarters of an Inch in Length, and more than half an Inch in Breadth. The Skin all about this Aperture is black, and without Hair; and the Aperture is easily enlarged, being not surrounded by a Sphincter Muscle as in other Animals, but being merely a Slit.

This Opening serves to give Passage to the Urine, as well as to the Excrements, the Rectum terminates in it, and a little above, the Extremity of the
Penis

this story we find frequent allusions among the Ancients. thus Juvenal

Imitatus Castra, qui se
Eunuchum ipse facit, cupiens evadere damno
Tuticulorum.

Penis in the Male is to be seen. There are within this Aperture two little Openings one on each Side, which admit a Probe a little Way only.

The old Story of *Eliau's*, that the Castor of the Shops was the Testicles of the Beaver, and that when hunted he used to gnaw them off, and leave them behind him for his Ransom, has no Foundation: The Castor is indeed not lodged in the Testicles of the Beaver, but in four large Bags situated below the *Os Pubis*: The two anterior ones are placed between, and are a little more elevated than the others; they represent the Figure of a Heart in their natural Situation, the Point of which is about an Inch below the *Os Pubis*; and the Sides, after expanding circularly, approach one another again to reunite in the upper Part of the common Orifice. The greatest Breadth of these two Bags together is about two Inches or a little more, and their Length about as much: They are externally of a greyish Colour, and radiated or mark'd with little Lines, but perfectly smooth, and so transparent, that the Surface seems to take its Colour from the Membrane it covers. This proves true in Fact, for on opening the Bag the internal Membrane, whose Surface is immediately cover'd by this, is found to be of a dusky grey Colour, and full of Wrinkles, which give the Appearance of Lines in the outer Membrane, though perfectly smooth. The inner Membrane is fleshy, and in these Wrinkles, or Folds, is found a greyish Matter of a disagreeable Smell, adhering very strongly to the Membrane. These two Bags communicate together by a large Aperture at the Top, and are only separated at Bottom; the Wrinkles also in which this fetid Matter is lodged, are continued, through the Aperture at the Top, from one to the other.

Such is the Structure of the two anterior Bags: Below these are placed the two others, one on each Side: These are of an oblong or oval Figure, in some Degree resembling each a long Pear, a little flatted, and not too round at the Bottom; these are considerably larger than the others. These two under and larger Bags are firmly joined to the others near the common Aperture, and form the Figure of an open V. It appears extremely probable, from the communication that is between these and the other Pair of Bags, that the Matter of the Castor is first separated from the Blood in those smaller Bags, and is from them transmitted to the larger to be farther perfected. This appears the more probable, as the Matter, though fetid in the upper Pair, yet wants the Colour and Consistence it has in the lower; and does not give one the Idea of the Castor of the Shops, which what is contained in the under ones absolutely does. The external Membrane of the larger Bags has under it a number of small Protuberances, of the Bigness of a Pea or little more; they are of a fleshy Substance, and have a Cavity in the Center, so that they seem so many little Bags of the Nature of the larger. The Cavity of these larger Bags is considerable, and contains a liquid Substance, which when dry'd becomes what we call Castor in the Shops; but while fresh it is an unctuous and fatty Liquor, of the Colour of Honey, of a very disagreeable Smell, inflammable, and in some Degree resembling a kind of melted Grease.

On opening these second Bags there is found within each, toward the lower Part, a separate Bag or Cavity, of an Inch and a quarter or thereabout in Length, and more than half an Inch in Breadth, which contains a Liquor like that of the larger Bag, but more yellow, thinner, and of a stronger and somewhat different Smell. The Membrane of this third Bag plainly discovers under

it a number of little round Bodies like those of the second Bag, and the Matter of the Castor seems as much more perfect in this third, than in the second Bag, as that in the second does than that in the first.

It is sufficiently evident from this Description, of the Situation and Contents of these Bags, that they are not the Testicles of the Animal. *Pliny* tells us, that *Sextius* laugh'd at those People who pretended that the Beaver gnaw'd off his Testicles when pursued, for that they were placed within his Body, affix'd to the Back-Bone. This discerning Person however only found the Way to refute one Error by another, for the Testicles of the Beaver are not fastened to the Back-Bone, but are hid, as *Dioscorides* very well observes, in the Groin of the Animal. *Amatus Lusitanus* and *Matthiolus* however, who have both professedly commented upon *Dioscorides*, and who say, that they had dissected Beavers in Presence of many Men of Knowledge, assure us, that they actually saw the Testicles adhering to the Back-Bone, in so firm a manner that they could scarce separate them. And *Rondeletius*, though he deserves some Praise for his Observations on this Subject, yet is in the same Error, and was so much overseen in regard to the Castor Bags, that he speaks of only two of them, not having discovered that there were four. Nor are there wanting some later Authors, who, though they are sensible that the Bags of *Castoreum*, and the Testicles of this Animal are quite different Things, yet misunderstand *Dioscorides* so far as to imagine, that when he talks of the Testicles of that Animal being situated in the Groin, he means the Castor Bags. *Dioscorides* seems to have known not only more of the History of the *Materia Medica* than many of the Moderns have imagined he did, but even more than they knew themselves. All the Authors who have written of the Situation of the Testicles of the Beaver, since the Days of *Dioscorides*, have been greatly mistaken about them; they are indeed no more buried deep in the Body of the Animal, than the Bags of *Castoreum*; they are placed on the external and lateral Part of the *Os Pubis* near the Groins, where they are entirely cover'd indeed by the Skin, and are no more to be seen than the *Penis*, till the Skin is raised. They are in no Respect at all like the Bags of *Castoreum*; they are much of the Shape of the Testicles of a Dog, but that they are somewhat longer and less thick, being more than an Inch long, and about half an Inch in Diameter. The *Penis* of this Creature is very singular; at the End, in the Place of a Glans, it has a Bone very small and slender, but more than an Inch in Length, and terminating in a Point: It is also singular in this, that as the *Penis* of the Dog Kind ascends toward the Navel from its Base; this, on the contrary, descends toward the Aperture form'd by Nature for the Passage of the Excrements, and is there hid in such manner as not to be at all visible till the Skin is raised, and consequently the Sex of the Creature is not discoverable but by that means.

On opening the Stomach of the Castor the Remains of Food found in it are always of the vegetable Kind, Fragments of the Bark, and Roots of Trees; nothing of the Fish Kind, nor any the least Smell of Fish: On the other Hand, in the Otter all the Contents of the Stomach have a fishy Smell. The *Foramen Ovale* in the Beaver is always closed.

We have no Beavers in *England* at this Time, but it appears by old Records that there were formerly many of them here. *Loyd* quotes a Passage in an earlier Author, who mentions the *Tervi* River in *Wales*, as the only one in that Country,

In Virgil's Time we find of most famous Place for Castor was Pontus in Asia Minor
Vivisage Pontus

Castoreo. Georg. 1. 2. 58. 9.

Castor seems to have of best Effect on those Patients whose Complaints are in a great Measure flatulent. Whitt on Nervous Disorders p. 386.

In Low Nervous Disorders it will promote Sleep better than any thing we know.
The Ancients mention it promoting sleep especially in Women, at y Time of their Courses.
Castoreo quæ gravi mulier sopita recumbit,
et Manibus nitidum teneris opus effluit igit,
Tempore ut si odoratus, quo Menstrua foliit. Lucretius Lib. 6. v. 794.

Country, which in his Time had any Beavers about it: And adds, that the same thing was at that Time the Case in *Scotland*, there being only one River there, about which any Beavers were found. It is very evident that they were once much more frequent in *Wales*, as there are still several Lakes call'd by a Name that antiently signify'd the Beaver Lakes. We are not to suppose the Species extinct with us by Accident, but destroyed by Hunting, as the Wolves have been.

At present Beavers are very plentiful about the Lakes of *Canada*, and *Hudson's Bay*, and in many other Parts of *America*; as also about the *Rhone*, the *Lifire*, and the *Oise* in *France*, and in several Parts of *Spain*, and *Italy*; but the greatest Numbers are kill'd along the *Elbe*, and the great Rivers in *Poland*, and *Muscovy*.

The Castor of the several Parts of the World differs in Goodness, and in regard to the Care taken in the drying. The *Russian* Castor has long been the most esteem'd, and the *New-England* Kind the least, the latter is usually much more dry'd.

Castor is a very valuable Medicine: It is of great Use in hysteric Cases, and in all Disorders of the Nerves: It attenuates viscous Humours, promotes the Menfes, and resists Putrefaction. It is good also in Epilepsies, Palsies, and all Complaints of that Kind. -

CHAPTER IV.

SANGUIS HIRCI, *Goats Blood.*

THE *Sanguis Hirci* kept in the Shops is a dry and solid Matter, of an irregular Surface, and lax friable Texture: We meet with it in Masses of half an Ounce, an Ounce, or more in Weight, but this is quite uncertain, these being only Fragments of larger Cakes into which the Blood has dry'd: It is very light and dry, and is easily powder'd: It is usually of a blackish Colour on the Surface, but paler within: It has very little Smell, and no very remarkable Taste.

It is brought to us from *Switzerland*, and is to be chosen sound and dry, and as fresh as can be had, for it is apt to decay in keeping, especially if any Damp gets at it. There were formerly three Kinds of Goats Blood kept under three distinct Names in the Shops: 1. That of the *Ibex*. 2. That of the *Rupicapra*, or Chamois. And, 3. That of the common Goat. The first Kind however has of late obtained the Credit of a more powerful Medicine than any of the others, and is the only sort used.

The Creature which affords us this is the *Steinback* of the *Germans*, distinguished by all the Naturalists under the Name of *Ibex*. It lives only on Mountains, and is extremely swift and dexterous in leaping from Rock to Rock at a great Distance. *Pliny*, and the rest of the old Authors, speak of the large Horns of this Animal: And *Bellonius*, who had seen numbers of them, says, that they are often as long as the Creature's Body, and considerably thick; they bend backwards, and are form'd of Series of Knots as it were, every Year adding one such Knot to them, so that the Age of the Animal may be known

by them. They are little bigger than our common Goats, but their Hair more resembles that of the Deer, than that of the Goat Kind, being short and thick set. The Male has a large brown Beard, and a black List down his Back: The Female has also some Marks of this, but in both it is much plainer as they grow older. The Legs of this Creature are slender, and the Head small, tho' loaded with that vast Weight of Horns.

The *Switzers* hunt them on the Tops of their Mountains, they eat their Flesh, and make some Profit of the Blood. The manner in which they prepare it is this: They cut the Neck almost through, and when they have let a little of the first Blood run away, they put proper Vessels under to catch the Remainder, till it begins to run thick; this last Blood they separate, as well as the first Running, from that intended for medicinal Use, supposing only the middle Running to be possessed of the Virtue. This they cover loosely with a coarse Cloth to prevent any Filth from falling into it, and set it in the Sun to dry.

The End of Summer is the general Time in which they hunt the *Ibex*, as they imagine its Blood is then much better for medicinal Purposes than at any other Season, the Creature having then had Time to feed on the aromatic Plants that grow on the Mountains the whole Summer. *Van Helmont* is for having the Blood, intended for medicinal Use, taken from the Testicles, rather than the Throat, but this can make very little Difference. It is esteem'd a Sudorific, and a great Medicine in Pleurifies, and Peripneumonies; and is at this Time in great Esteem, and frequent Use in the *German* Shops; but with us it is so entirely disregarded, that it is hardly any where to be met with.

For the chemical Analysis of Goats Blood the Neck of the Retort is to be cut off so near the Body as to leave a very wide Mouth; the Goats Blood is to be powder'd and put into this, and the Receiver well luted on; then setting it in a Sand-heat there will arise first an unctuous oily bitter, and lightly alkaline Liquor; after this a volatile alkaline Salt, in a concreted Form, applies itself to the Neck of the Retort, and Sides of the Receiver; on encreasing the Fire a fine yellow Oil will come over, and with it still more Salt: After this, if a Fire of Suppression be used, there rise white Fumes very copiously, and with these more Oil, but of a black coarse Kind: These Fumes continue to rise so long, that it is tedious, and almost endless to observe them; but the Process, if there have not been proper Caution used, will terminate here, for the black Matter in the Retort fuses perfectly with this Heat; and in Fusion it rarifies, swells, and blocks up the Neck of the Vessels, the Consequence of which is the bursting of the Glasses with a very dangerous Violence.

The Products of the Distillation are an alkaline oily Spirit; a volatile alkaline oily Salt; a Salt a little more fix'd, and much more oily; a yellow thin Oil; and a thick, black, and pitchy one; all these contain an Alkali. The Remainder, at the Bottom of the Retort, is a black pitchy glossy Matter; light, spongy, fetid, bitter, and empyreumatic, but not very saline; this burnt in an open Fire takes Flame, and the Blackness is then soon consumed: The Remainder being only a white Earth, which lixiviated yields not the smallest Particle of Salt of any Kind.

In the nice Distillations, by way of Analysis, the Way to prevent the Accident

It is recommended in *Plurivico* by D.^r Mead in his *Manita Medica*

cident of the Expansion of the Blood, and bursting of the Vessels, is the cutting off the Neck of the Retort so as to make a large Mouth, and the nice watching the Process: But in larger Distillations of Substances, apt to rarify and come over into the Receiver, the Addition of Earth of any Kind prevents the Mischief. Wax, Honey, and several other Things are apt to rarify thus, and come over into the Receiver, and if not burst the Vessels, at least frustrate the Operation; but this is certainly prevented by first mixing them with a large Quantity of Tobacco-pipe Clay; this may either be added at first, or thrown in in Powder toward the End of the Process when the volatile Parts are come over.

The Goats Blood we receive, dry'd from *Switzerland*, is often adulterated with the Blood of Oxen, or Sheep killed here, and reduced to this State by Evaporation; but the *Switzers* have a much better Way of preparing it than we, for ours being hastily done, never is of the firm Consistence of what we receive from them. We find by Experiments of this Kind however, how great a Quantity of the Blood is lost in the reducing it to this State. A Pound of any common Blood dry'd in a *Balneum Mariæ*, which is the readiest Way of doing it without danger of burning, affords only two Ounces and three Drams of the dry'd Matter; and yet this small Portion evidently retains all the Virtue of the whole, for if the evaporated Matter be saved by Distillation it is mere Water: It is limpid, colourless, and without Smell, or Taste: It makes no Effervescence either with Acids, or Alkalies, and is in all Respects mere Water.

CHAPTER V.

MUMIA,

Mummy.

WE have two different Substances preserved for medicinal Use under the Name of Mummy, though both in some Degree of the same Origin: The one is the dry'd and preserv'd Flesh of human Bodies, embalm'd with Myrrh and Spices; the other is the Liquor running from such Mummies, when newly prepar'd, or when affected by great Heat, or by Damps: This latter is sometimes in a liquid, sometimes of a solid Form, as it is preserved in Vials well stop'd, or suffered to dry and harden in the Air.

The first Kind of Mummy is brought to us in large Pieces, of a lax and friable Texture, light and spongy, of a blackish brown Colour, and often damp and clammy on the Surface: It is of a strong but not agreeable Smell.

The second Kind of Mummy, in its liquid State, is a thick, opake, and viscous Fluid, of a blackish Colour, and a strong, but not disagreeable Smell. In its indurated State it is a dry solid Substance, of a fine shining black Colour, and close Texture, easily broken, and of a good Smell; very inflammable, and yielding a Scent of Myrrh, and aromatic Ingredients while burning.

This, if we cannot be content with Medicines without running to our own Bodies for them, ought to be the Mummy used in the Shops, but this is very scarce, and very dear: The other is so cheap that it will always be the most in Use. All the Kinds of Mummy are brought from *Ægypt*, but we are not to

imagine, that any Body breaks up the real *Ægyptian* Mummies to sell to the Druggists, as they may make so much better a Market of them in *Europe* whole, when they can contrive to get them. What our Druggists are supply'd with is the Flesh of executed Criminals, or of any other Bodies the *Jews* can get, who fill them with the common *Bitumen*, so plentiful in that Part of the World; and adding a little Aloes, and two or three other cheap Ingredients, send them to be baked in an Oven till the Juices are exhaled, and the embalming Matter has penetrated so thoroughly, that the Flesh will keep, and bear transporting into *Europe*.

Mummy has been esteem'd resolvent and balsamic, but whatever Virtues have been attributed to it, seem to be such as would depend more upon the Ingredients used in the preparing the Flesh, than in the Flesh itself; and it would surely be better to give those Ingredients without so shocking an Addition.

Beside the Mummy however, the human Body has been made to furnish many other Substances for medicinal Purposes: The Skull has been celebrated for its imaginary Virtues against Diseases of the Head, and given to People in large Doses for Epilepsies, as well as made an Ingredient in most of the Compositions of that Intention; though nothing can be more certain, than that the human Skull contains no more volatile, or active Principles, than the Bones of other Animals, nor can possess any great Virtues.

The very Moss growing on the Skulls of human Skeletons has been supposed to possess the same antiepileptic Virtues; and sent from *Ireland*, and other Places where the Skulls are left a long Time exposed to the Air, into all Parts of *Europe*. It cannot be necessary to say much in Proof that the Moss growing on a human Skull, possesses no more Virtues than that which grows on a Stick or a Stone, but this is less shocking to ones Nature, than the swallowing the Flesh and Bones of our fellow Creatures.

Lemery has given a Process for the distilling a Spirit, Oil, and volatile Salt, from a fresh human Head with the Brain in it: But as these can possess no other Virtues than those of other animal Products of the same Kind, it is to be hoped no Body but himself ever made them.

The Fat of the human Body has been also recommended as good in Rheumatisms, and Druggists have kept large Quantities of it by them: And the Blood, and in short every other Part or Humor of the Body, have, at one Time or other, been in Repute for the Cure of some Disease.

At present we are grown wise enough to know, that the Virtues ascribed to the Parts of the human Body are all either imaginary, or such as may be found in other animal Substances. The Mummy, and Skull alone of all these horrid Medicines, retain their Places in the Shops; and it were much to be wished they were rejected too.

by the assistance of Heat, it totally dissolves in Spirit of Wine, & when
recovered from it aging proves darker coloured than at first.

Natural Productions of Animals

Used in MEDICINE.

CLASS the FOURTH.

COLLECTED SUBSTANCES.

Of these we have only two, but those of very great Consequence.

1. WAX.

2. HONEY.

CHAPTER I.

CERA,
Wax.

WA X, or as we sometimes call it by way of distinguishing it from the Sealing-Wax made of Gum Lac, *Bees-Wax*, is one of the Products of the Bee-Hive, which, though it is as well as the Honey of vegetable Origin, yet as we have no Way of procuring it but by means of the Bees that have stored it up for us, is to be reckoned in the same manner as the Honey, among the number of Drugs which we receive from the animal Kingdom.

Wax is a firm and solid Substance, moderately heavy, and of a fine yellow Colour: It melts with a gentle Heat, and is inflammable: It is soluble in Oil, but not in aqueous nor spirituous Menstruums: It is almost insipid to the Taste, but is of a fragrant and agreeable Smell. Wax, in its original State, is the Matter which composes the Honeycomb; it is prepar'd into the Cakes we see it in, merely by melting and straining through a Cloth, which separates the Dross and Foulness, and lets the clear Wax through. It may be farther purify'd by melting again, and scumming it while in Fusion and repeating the straining, by this means it will become of a good Consistence and high Colour: It is to be chosen of a strong yellow Colour, and fragrant Smell; and such as breaks tolerably easily, and on chewing in the Mouth does not stick to the Teeth.

The true Origin of Wax is this: The Flowers of Plants have for one of their principal and essential Parts, certain Filaments, or Threads, call'd by botanical Writers Stamina, rising usually from their Base, or Center; these are different in number, from one to a vast abundance in each Flower: These sustain at their Tops certain little Bodies, usually of a round, but sometimes of other Figures, call'd by the same Authors Apices, or *Antherae*, and containing a fine dusty Matter, or variously colour'd Powder. These Stamina and Apices were
long

long esteemed of very little Use to the Plant, mere Ornaments, or the Receptacles of an abundant Juice sent up to the Flower ; but of late Botany has received too many Improvements to be left chargeable with so gross an Error : These are discovered to be essential to the great End, the propagating the Species of the Plant ; they are indeed the Male Parts, serving to impregnate the young Seeds in the Pistil, and the impregnating Matter is found to be the Dust or Powder in these Apices ; this is call'd therefore the *Farina Fæcundans* of Plants ; and however little this may have been suspected to have to do with our Subject, it is indeed the very thing of which the Bees form their Combs, or in other Words, the Farina of Plants, is Wax not yet reduced to Form by the Bees. These little Creatures seek no farther for the Materials of their Combs than to the Apices of Flowers ; these, if of a more solid and firm Texture, they are at the Pains of opening with their Teeth ; or if less tough, or already opening, they rob of their Farina by rubbing their Bodies among them, and so dislodging the Dust which adheres to their Bodies by means of the Hairs they are cover'd with, and is thence collected into a Mass. *Swammerdam*, a very nice Observer of the Operations of Bees, had discovered that their Wax was at first only a Congeries of little Globules, but he little imagined what those Globules were, or whence they were collected ; but this will be easily made out, if we watch the Process in a single Bee employ'd in the collecting this Part of the Furniture of the Hive.

If we observe a Bee just lighting on a Flower well open'd, and in its perfect State, we shall observe, if the Creature be new flown from the Hive, that its Body is clean and free from any Speck of Dust, or other foreign Matter ; but as soon as she is enter'd the Flower she shakes herself about among the Stamina, and rubs every Part of her Body as forcibly as she can against them. When she has done this she is no more the clean Creature she was before. The Farina is in great Part dislodg'd out of the Apices by this Motion, and rubbing, and though by its natural, smooth, and usually round or roundish Figure, it would easily roll off from any other Body, it is retained on that of the Bee by those Hairs with which Nature has cloathed her, probably in a great measure for this very Purpose.

The Bee therefore is in a few Moments seen to come out of the Flower again, not the clean neat Creature it was before, but all over dusty, and sprinkled with a yellow, a red, or a white Powder, according to the peculiar Colour of the Farina of that Plant. In Times of the greatest hurry at the Hive, the Bees return back as soon as they have thus loaded themselves with this Matter, and others clean them and take Care of it, sending them out for more ; this is the most expeditious Method ; but when the Business of the Hive is less pressing, the Creature cleans itself of it, and in this Case we see more of the Process of the forming it into Wax. In this Case as soon as the Bee is out of the Flower, it rests on some other Part of the Plant, and with its four hinder Legs, which are very agile and pliable, it brushes off the whole Quantity of Powder from every Part of its Body, and forms it into a little Lump ; then with its foremost Pair of Legs it carefully brushes its Head, and all the Parts about it, and having collected the Dust lodged there into another smaller Ball it adds that to the larger, and forming one Mass of the two, it breaks this again into two equal Halves, one of which

it places on the third Joint of each of the hinder Legs, which is form'd by Nature to receive it, being a kind of triangular Receptacle, wholly unlike any other Part of those, or of any of the other Legs. This Lump on each Leg is first form'd into a roundish Figure, and then press'd into the Cavity of that triangular Receptacle, the Hairs situated on the Edge of which prevent its slipping out till the Bee gets back to the Hive.

The Quantity of Farina obtained from one Flower, when thus collected into two Lumps, is seldom more than what is just sufficient to form a couple of Balls of the Size of a small Pin's Head each; but the Bee when it thus takes the Trouble of the whole upon itself, does not return to the Hive with this little Store; it flies into other Flowers one after another, and adding to these Lumps the Matter collected in each, it at length encreases them to the Size of Pepper Corns, and then finds itself sufficiently loaded to return home.

The Motion of the Creature's Limbs in brushing its Body, and forming the Matter which it brushes off into Balls, is so quick, that the Effect of it only can be seen in the Cleanness of the Body, and the Formation, or Enlargement of the Balls on the Legs, the manner in which it is done escapes our Sight.

This is the Method in which the Bee furnishes itself with the Matter of Wax from the Apices of Flowers that are very tender, or already burst; but when this Creature finds a Flower whose Apices are firmer, and yet whole, it has more Trouble in the doing it.

The Blossoms of the Pear-Tree are of this latter Kind of Flowers: When they are just opened, if a Bee entering into one of them be watched, she will be seen to try first which of the Apices is most ripe, and opening that with her Teeth, she will scoop out the Farina with her fore Legs, and immediately work it into a Ball and lay it on the hinder ones, on the Part destin'd to receive it. It is convey'd from the first Pair of Legs to the second, and from these to the hinder ones, but that in so quick a manner, that the Eye is, as in the other Case, only able to see the Effect, by no means perceiving the manner of the Action.

There is however another Circumstance in which we see the Animal perform all these Operations very distinctly. The Bees sometimes collect a reddish resinous Substance, as they do the Wax, and carry it to the Hive in the same manner; this is so tough and viscous that they have some Difficulty to manage it, and their Motions are consequently the slower; they first receive it from the fore Feet into the Mouth, they there fashion it into a round Lump, thence it is then taken again by the Feet of the fore Legs, from these it is deliver'd, after more working, to the Feet of the second Pair of Legs; and after they have moulded it yet more, they apply it to the triangular Part on the hinder Pair. This then is the Process of the Wax too, though in that not liable to our Inspection: The fore Feet collect it into a Mass; the Mouth works it into some Toughness; it is farther moulded in the Feet of this and the second Pair of Legs afterwards; and finally it is lodged by the latter of these on the Part destin'd to convey it to the Hive: The placing it in this last Part is the great Operation, it is moulded thoroughly there, and press'd by the Feet of the second Pair of Legs into the Cavity, in such a manner as to receive its exact Form, with Toughness enough to retain it.

The Lumps of Wax, as carried to the Hive by the Bees, though in general yellow, yet some of them having been obtained from Flowers whose Farina is of other Colours, as white or green, are of those Colours: The Manufacture the Bees have hitherto given it, not being sufficient to alter its Colour nor indeed its Figure, for if closely examined the Lumps will be all found composed of Numbers of round, or otherwise regularly figured Globules, which are the Farina unaltered in its Form.

It is observable that the Bees which go out in their Morning Excursions, always return well loaded with Wax, but those which go out in the Heat of the Day, bring home much Honey indeed, but little of this. The Reason is, that in the Morning the Flowers being wet with Dew, that Moisture renders the working the Farina into a Lump very easy to the Creature, whereas in the Heat of the Day, when the Dew is dried up, and that Substance is a mere dry Powder, they don't know how to manage it. This Substance thus lodged in little Balls on the Legs of the Bees, though the Matter of which Wax is evidently formed, is not at this time perfect, compact and ductile Wax. We usually call it so indeed, but it is because we have no other Name for it, though we seem almost the only Nation that have not. The Ancients called it *Erithrace*, *Sandarach*, and *Ambrosia*; the *French* call it *Cire-brute*, or rough unfinished Wax, a very proper Name, and the *Dutch* by one not much less proper, expressing *the Food of the Bees*; for it is pretty certain that these Creatures eat it, nay, that it is their principal Food, and that it is, after having parted with all its nutritious Matter, that it becomes Wax in their Bodies. As retained upon their Legs it is so far from being perfect Wax, that it is brittle and not at all ductile, and on moulding between the Fingers will never form itself into a tenacious Matter as Wax will: If tried with a greater Degree of Heat, it will still be found to differ as much from perfect Wax: If held in a Spoon over the Flame of a Candle, it will not melt, but it will readily take Fire and burn to a Cinder, though with the perfect Smell of Wax: Another very singular Property of this Substance not found in perfect Wax is, its being heavier than Water. It always sinks in this Fluid, whereas perfect Wax always swims, and this is not owing to the Humidity about it, but to its own real Gravity; for if kept till dry, it will still sink in the same manner. If this Matter be pounded in a Mortar ever so carefully, it does not become any more waxy than before. Nothing therefore is more evident than that the Bees do something to the Matter of which Wax is formed, before it is reduced to that ductile and fusible Substance which we call by this Name. *Swammerdam* and *Maraldi* concurred in their Sentiments, as to the Bees making the rough Wax into the perfect by adding Honey to it: But this System is thrown to the Ground by Experiment, for Honey mixed in any Proportion with this Matter and beaten together, does not make it at all more like Wax than it was before. The first of these Authors afterwards altered his Opinion, and supposed that the poisonous Liquor which the Bees inject into the Wound made by their Sting, was the thing mixed with the Matter collected on their Legs to convert it into perfect Wax. He endeavours to strengthen this Opinion, by observing that the Sting of this Creature comes so seldom into use, that but for this other Purpose intended to be answered by the Liquor in this Bag, Nature would scarce have been at the Pains of furnishing the Creature

with it. But this Argument is set aside by observing, that the Humble Bee, Wasp, and Hornet, have all this Bag of poisonous Matter as well as the Bee, and this for no other Purpose, but to supply Poison to the Sting, for that they never make any Wax at all. Their Combs, in which they deposit the Honey they collect, being formed of a quite different Matter.

What Share the Operation of the Stomach of the Bee may have in connecting the Farina of Flowers into perfect Wax we are not certain, but probably it is not much. It is most likely that the Change is made by gradual and long continued moulding, pressing the Matter between their Feet, no Process so likely to give Ductility as this, and Ductility is the thing wanting in this Substance, and no Process is so like the general Course of the Insect Tribe on similar Occasions. If it were possible for us to arrive at a Method of doing this, it would be of infinite Use to us. The Bees collect the Wax but of a very small Quantity of the Farina of our Flowers. Doubtless a hundredth Part of it is the utmost Proportion thus employed, and the greater Part of the rest is absolutely wasted, a very small Quantity of it being enough to answer the Purposes of Propagation.

This Farina would be easily collected in vast Quantities, by shaking the Trees and Plants and otherwise, and Wax might be made in vastly greater Abundance than at present, if we could find the means of Working it when we had obtained it. The Assistance of various Liquors has been tried on these Occasions. It is observed that the Farina of the Flowers of Plants retains its gure a long time in Water and many other Liquors, but that they impart a strong Tincture to these Liquors; upon this Foundation, the Matter taken from the Legs of Bees has been infused in common Water, in Spirit of Wine, and in Oil of Turpentine, for three Months together. After all this Time standing, the Water Infusion being evaporated to a Dryness, yields a vegetable Gum, no way differing from that of our Plum and Cherry Trees, as easily soluble in Water, and giving it the same Kind of viscous Quality. The Tincture in Oil of Turpentine affords very little Residuum, and that rather owing to the Oil than the Matter; indeed on boiling the same Matter in that Menstruum, very little is obtained from it, or very little Alteration made in it. The Spirit of Wine seems the Menstruum much best of all appropriated to this Business; on evaporating the Tincture in that Liquor, when the Matter becomes small in Quantity, a strong Smell of Wax is perceived, and a Cake of yellow Matter wholly resembling Wax, is left at last in the Bottom of the Vessel. This abundantly proves that Wax is really in the Farina, and also that a spirituous Menstruum is well adapted to the Business of separating it, and reducing it to its more perfect State.

The Cake of Matter left in this Evaporation is of the Smell and Colour of Wax, and is ductile and easily moulded into any Form between the Fingers. It is also fusible, and melts over a very gentle Heat, but when taken into the Mouth, it readily breaks, and will not unite again. It is therefore yet not perfect Wax. It appears probable that some Salt remains mixed with this Extract; its breaking, and as it were dissolving in the Mouth seems to evince this, and it may be added, that if dried ever so perfectly over a gentle Heat, it will soon imbibe Moisture from the Air, and become damp and clammy on the Surface.

Spirit of Wine appears therefore to approach to the Nature of a true and

proper Dissolvent of this rough Wax, but it is not absolutely so, and therefore will not afford us perfect Wax from it. It is one of the Opprobria of Chemistry, that we do not yet know a Solvent for Wax in its perfect State. If we knew this, doubtless the same Menstruum would answer our other Purpose, and separate it either from the Matter lodged in Balls on the Legs of Bees, or from the crude Farina of Plants itself. But till we know such a Menstruum, it is not rational to expect to be able to bring the other Attempt to Perfection.

Spirit of Wine, digested upon real and perfect Wax, does not dissolve it, but it takes up a Part of it, and this being separated by Evaporation appears evidently the same with the Cake formed by evaporating a Tincture of the Farina, or yellowish, soft, and ductile Matter, having the Smell, and many of the Properties of Wax, but being soluble in Water.

The additional Matter which these Extracts contain beside Wax, is evidently of the Nature of Sugar, and is some Remains of the saccharine Juices of the Plants, whose Farina it is made from. This appears by the evidently saccharine Taste of a Tincture made from Virgin Wax, or the first Combs of a Swarm of Bees; and this will unquestionably render it liable to attract Moisture from the Air, and to break in the Mouth. On the whole, if only moulding and stamping the Farina of Flowers is of Power to convert them into Wax, or if an appropriated Menstruum that could separate the waxey from the other Matter in the Farina will do it, we may be yet in Hopes of some time arriving at the Art of making Wax without the Assistance of Bees; but if a Concoction in the Body of the Animal be requisite to this End, we are no more to wonder that we cannot make it, though we know the Materials it is formed of, than that we cannot make Chyle or Blood from the Foods of which we know that they are formed in the Bodies of Animals.

Bees Wax, though of so firm and solid a Substance, yet contains no fixed Principle or Earth, but rises wholly in the Fire in the common Way of Distillation by the Retort, without leaving any the least Residuum. Another very singular thing in this Distillation is, that the more fluid Matter there is come over into the Receiver, the thinner the Remainder in the Retort is, not the thicker as might have been expected. What is called the Spirit of Wax, is a Phlegm with a small Portion of an acid Salt suspended in it, when this is driven over, the Remainder in the Retort does not harden again when cold, but remains a soft, fatty Substance, called the Butter of Wax; and if this be distilled again, that is, if more Phlegm, or as it is called Spirit, be separated from it, it becomes yet thinner; and by repeating, the Process will be rendered as thin and clear as Oil. It appears by this Analysis, that Wax is composed of at least two Parts, a Water or Phlegm containing some acid Particles, and an Oil, and that these two Fluids have by their intimate Union formed a Concrete of a solid Substance, which will not be rendered permanently fluid, but by separating them again. It is somewhat singular too, that the Oil is but in small Proportion in the Mass; one would naturally imagine that it constituted the greatest Part on observing the Form and Texture of the Concrete, but it appears otherwise on Analysis, all the Care in the World not being able to procure one fourth Part of the Weight of the Wax, in Form of clear, pure Oil, when all its Water is driven off by repeated Distillations. It is a singular
Observation,

It combines in all States with substantial Oils by the aid of heat-

This appearance of the Wax seems not extraordinary at all, when it is considered that all oils are rendered of more solid consistence by the Addition of any Acid, & the Expulsion of the Acid in this Process is the true Cause of the fluidity of the Matter —

Observation, that so solid and firm a Body as Wax so perfectly indissoluble in aqueous Menstruums, should be three Parts Water; and yet more strange that a Substance which is inflammable to so great a Degree, as to burn all away, is yet principally Water, and that when we see it flame so violently, the greater Part of what is burning in that furious manner, is absolute Water.

The Bee, the industrious Insect to which we owe the Wax and Honey, is a Creature as singular in its History, as in its Operations. The common System of Males and Females is not observed among them. The common Bees which we see at Work, are neither Male nor Female: They have no Organs of Generation of any Kind, nor concur any Way in the Propagation of the Species. As to the female Sex, there is only one necessary to every Swarm. This Creature is never seen, unless by great Care in the Search, or by great Accident. She is larger than, and differently formed from the rest. She is alone capable of laying the Eggs that shall hatch into a whole Swarm. The Males are considerably numerous; they are what are called Drones in a Hive. They live lazily, eat plentifully, and never do any of the Work of the Hive. Their whole Business is the impregnating the Female, and so long as this is about, the working Bees suffer them to eat of their Labours, but as soon as this Time is over and they are of no Use to the Community, the whole Body of the other is against them, and they are driven out and destroyed. The Eggs deposited from the Body of the Female hatch into a Kind of white Maggots, which lie at the Bottom of the Cells, and are carefully fed by the working Bees till the Time of their Change into the Bee State, when they are to shift for themselves, as they see the rest do.

The Fertility of the female Bee is so great, that she will produce not less than fifteen or twenty thousand young in a Year. All who are acquainted with the Oeconomy of these Insects, know the wonderful Respect and Homage that are paid her: Nor is it wonderful when we consider that she is properly the Mother of all her People. It has been observed above, that there is usually but one Female in the Hive; there sometimes are two; sometimes, though very rarely, three; one however is sufficient in a Hive in which there are not less than eight thousand Bees, which is about the common Number.

The Number of the Drones is very uncertain; they are much more numerous in some Hives than in others; but none at the full Season have less than some hundreds. They are produced like the rest by the Queen or Female, only that the Eggs destined to afford them are lodged in larger Cells; a strange Discernment in the Female! The Eggs for the Production of the Females themselves are lodged in yet greatly larger, formed with vast Care and Ceremony; nor has it ever been known by the People that have Glass Hives, nor perhaps ever happened in the World, that the Female has deposited any other Egg than such a one as was to produce a Female or Queen in one of these large Cells. The Appearances of Sagacity in this little Insect are amazing: Many wonderful Things have been recorded of Bees from Error or Fancy, which deserve to be laughed out of the World; but nothing is more certain than that they distribute their Labour in a most orderly Manner among one another, some being employed abroad, others within Doors, and all labouring

to the same End, the providing for a succeeding Offspring, and the laying up Stores.

Beside the common Bees which are kept in Hives, and which prepare Combs and Honey for the Lodging and Food of their young, there are some which do nothing of this, but breed in Holes which they find or make in old Willows, and in other rotten Trees: These Holes they fill up with a Kind of cylindric Cases made of the Leaves of the same Tree or those of some adjoining one, each containing one young one; but these are as much more scarce as they are less useful to us than the others.

The chemical Preparations of Wax are very little regarded: In its own Form however it is of very great Use both in Medicine, and in many of the Arts and Manufactures. It is sometimes given internally, as in Dysenteries, and other Erosions of the Intestines; but its great Use is in the making Ointments and Plaisters for external Use; the greater Part of those of the Shops owe their Consistence to it.

Wax is indeed excellently fitted for these Purposes, being a Kind of fatty Refin or Turpentine, and qualified to answer all the Uses of a mixed Body of that Nature. It is indeed so evidently a Vegetable Production in its Original, that it is not only found almost pure in the Farina of Plants, but it is sometimes exsuded from their very Leaves. There is scarce any known Plant the Stamina of which seems so much to abound with Wax as those of Rosemary, and these are not the only Part that contain it. Whoever will handle the Leaves of Rosemary, will find a viscid Matter in considerable Quantity on them, and this will on continuing to handle them, be collected on the Fingers in such Quantity as to be rolled off in little Lumps, which when examined are real Wax, at least as pure as that in the Farina of any Plant in the World.

Spirit of Wine digested on fresh Rosemary Leaves, will also draw a Sort of Tincture from this waxy Matter on their Surface; and this, when evaporated, will yield the same Smell of Wax as the Tincture of the Farina does, and will leave the same Kind of soluble Wax in a Cake at last.

However singular the total Volatility of Wax may appear, to those not used to chemical Experiments, there is this to be observed in regard to it, that it shews the Truth of the Assertion, that it approaches to the Nature of Turpentine; for Turpentine with a Fire properly managed will in the same manner all rise over into the Receiver: Both these Substances agree also with Camphire in this Respect, though the Disparity between Camphire and them in regard to the Degree of Volatility, or the Degree of Fire necessary to raise them is immense. They all have their separate Qualities also; after having been thus raised by Fire, Camphire becomes Camphire again, and not a liquid Oil; the very liquid Oil of Turpentine kept a considerable time loses its Fluidity, and becomes as thick as the Turpentine it was made from; whereas the Butter of Wax remains unaltered for ever so great a Number of Years, never becoming thicker than at first. It is also singular that the repeated Distillations of it, though they render it more thin and Fluid, and greatly more penetrating, yet it becomes all the Time more and more mild and gentle, less, not more acrimonious, as might be expected.

From

From the common yellow Wax by the mere Effect of Sun and Air, or by what is called Bleaching, is formed what we term white Wax, and some, very improperly Virgin Wax. As the greater the Surface is in Proportion to the Quantity, the sooner and the more perfectly this Operation is performed, the usual Way is to melt the Wax in hot Water; when melted, they press it through a Strainer of tolerably fine Linen, and pour it into round and very shallow Moulds. When hardened by cooling, it is taken out and exposed to the Sun and Air, sprinkling it now and then with Water, and often turning it; by this means it soon becomes what we call white Wax. This should be chosen dry, hard, and brittle, of a good Smell, and not too soft in the Mouth. It is an Ingredient in some of the Cerates and Ointments of the Shops, and is used in many of the nicer Arts and Manufactures where Wax is required.

The soft, red and green Wax have also this for their Basis. They make it by melting Wax over a very gentle Heat, with such a Proportion of *Venice Turpentine*, as when cold will give it the due Consistence. This they determine by repeated Trials, first putting in but a little Turpentine, and afterwards more and more, till by dropping a Piece upon a Marble to cool, they find it of the true Consistence; they then colour it with red Lead or Vermilion, or with Verdeter, or what other Colours they please, the Mixture in this State receiving any. This is the Wax used in large Seals to some of our Law Writings. The thicker and the thinner Oil of Wax, or, as they are usually called, the Butter of Wax, and the rectified Oil of Wax, deserve to be more regarded than they at present are. The Butter is an extremely soft and anodyne Unguent, highly emollient and relaxing, agreeable to the Nerves, and when rubbed on contracted Limbs, proves of great Benefit to them. It is an excellent Liniment for the Piles, and takes off the Pain attending them in a very sudden and surprizing Manner. It also keeps the Skin soft and supple, and is one of the best Things known to keep it from cracking or chopping in the Winter.

The rectified Butter as it is called, or the thin Oil of Wax, possesses the same Sort of Qualities, and many of them in a much higher Degree. It is excellent as a Liniment in nervous Cases. It cures chapped Nipples in Women who give Suck beyond any other Application, and is as successful against chapped Lips and the cracking of the Skin on the Hands, only rubbing them once in three or four Days with it. It is of great Use in discussing cold Tumors arising on the Face, and those on the Fingers in Winter, and in curing contracted Tendons, and the Rigidity of the Limbs arising thence. It has indeed a very singular Virtue in restoring Flexibility to the Parts, and if the Use of it be assisted in bathing in warm Water, or by Fomentations and Motion, it is scarce to be imagined what Effects it will produce in Cases where little seems to be expected. Frequently rubbed on the Abdomen it prevents Costiveness, and used in the same manner is excellent in many of the Diseases of Children. Wax in Solution possesses some of these Virtues; but in this Form of Oil, divested of its watery and acid Part, and not loaded with the Particles of any Dissolvent, it is not wonderful that it should do extremely more, than in so altered a State.

CHAPTER III.

M E L,
Honey.

HONEY, though in strict Propriety a vegetable Production, yet is to be numbered among the Substances we owe to the Insect Class, since though produced in Plants, we have no Way of collecting it thence, nor even meet with in any Quantity that can be of Use to us, except where lodged by the industrious Bees that have collected it.

Honey in general is a thick, viscous, and more or less fluid Substance, of a whitish or yellowish Colour, sweet to the Taste, soluble in Water, and becoming vinous on Fermentation, inflammable, liquable by a gentle Heat, and of a fragrant Smell.

We have three Distinctions of Honey, according to its Purity, Fluidity, and the Manner in which it has been procured from the Combs in which the Bees had lodged it.

The first and finest Kind is Virgin Honey; this is not very firm; it is of a white Colour and fragrant Smell. It is the first Produce of the Swarm, and is obtained from the Comb without pressing, the Combs only being set to drain in order to its running out. This is much preferable to any other Kind of Honey, but it is rarely met with genuine. The second Kind is that known by the Name of white Honey in some Places from its Colour. This is thicker than the last, and often indeed almost solid. It is procured by pressing the Combs, but that without the Assistance of Heat. The third and worst Kind is the common yellow Honey. This is obtained from the Combs first heated over the Fire and then pressed. This is always inferior to the other two Kinds, but sometimes it is so burnt as to be of a brownish Colour and disagreeable Smell, and is then not fit for medicinal Use.

Honey is prepared in the Flowers of Plants: The only Office of the Bees is to collect the small Quantities lodged there, and amass them into Stores capable of furnishing themselves with Food, and us with a Supply sufficient for our Purposes. The oldest Writers we have any Knowledge of, mention Honey being collected from Flowers: All Ages seem to have agreed in that Opinion; and indeed the seeing the Bees continually at Work about Flowers, and the tasting the Sweetness on the Bases of many Flowers, particularly the common Trefoil and the like, could not but point out this as the true Resource of it; but it is but of very late Years, that we have been informed of the Manner in which it is secreted in Flowers, and of the means by which the Bees collect it thence.

That great Ornament of the present botanical World, *Linnaeus*, first discovered, and gave Name to certain Glands situated near the Bases of the Petals of Flowers, and continually secreting a sweet Juice, or in other Words, Honey. This Author has very aptly termed them *Nectaria*, and has found them so obvious, and so distinct in the Flowers of Plants of different Kinds, that he has often made them a Part of his generical Distinctions, nay in some Genera the whole Distinction absolutely depends on them. All that concerned

Linnaeus,

Linnaeus, was the shewing the Existence and Office of these Glands. It is to *Reaumur* that we owe the Discovery of their being the true Sources of Honey; and the Manner of the Bees getting it from them.

It is plain that these little Creatures have of all Ages known the Existence of the *Nectaria* or Honey Glands of Flowers, though we have come at the Knowledge of them so very late. The Bee who is out upon the Search after Honey, no sooner sees a Flower that it likes, than it settles on it, and seizing on these Glands, it sucks from them all the sweet Juice they contain. This Juice is either absolute Honey, or so near it that it becomes so by a very easy Operation. The Creature has no Way of carrying home the Treasure it has thus taken up but in its Body, it consequently swallows it, and flies away to the Hive, where it immediately discharges it into some of the Cells of the Comb, and it is then at least Honey. The Instrument the Bees use to drain these Glands of their sweet Juice, is their Proboscis or Trunk: This is inserted in the hinder Part of the Head of the Creature, and is generally carried by it in a Position bent so as to lie upon the Breast and not be in the Way; it can however at Pleasure exert it strait forwards from the Head, and make it resemble the long Beak of a Bird. This Trunk is jointed in the middle to make it capable of bending round the Front of the Head, and is composed of an outer Case, made of two Pieces of a hard shelly Matter, and of a brownish Colour, and of a slender Filament within, which is the true Organ of Suction. As a Drop of the Honey Juice is however received into the Extremity of this, all the rest of the Trunk changes its Figure from flat to roundish, and retains this as long as the Drop remains in it.

When the Bee settles upon a Flower, it first strikes its Trunk to the Bottom of it, and picks up what it finds there, which is usually not a little. The *Nectaria* are continually secreting this Juice, and it exsudates by Degrees from them, and falls to the Base of the Flower where it concretes into a Substance perfectly resembling candied Honey. The Bee lengthens and shortens its Trunk continually, and gives it a great Variety of Motions in different Directions, in order to make it touch every Part of the Bottom of the Flower; and when it has thus contrived to take up all the extravasated and somewhat hardened Juice lodged there, it attacks the Glands themselves, and gets out all the more Fluid that is found in them. It has been generally supposed, that the Trunk of the Bee was a Kind of Pump, and acted by Suction; but if this were the Case, so many various Motions would not be necessary to the getting up the Juices of the Flower, it need only once plunge it into the Base of it, and continue to suck till the whole was drawn up: But *Reaumur* has proved by many Experiments, that this Instrument of the Bee is a mere Tongue, placed at the End of an Organ fitted for conveying into the Body what it laps up. The Bee has however beside this, another Mouth, and that considerably large, with its proper Tongue belonging to it.

The Honey thus taken up into the Body of the Bee, and deposited again in the Cells of the Comb, is destined for the Food of the young Offspring while they shall be unable to go out and help themselves; but in hard Seasons when the Bees cannot go out of their Hives, or when there is no Food for them abroad if they could, they are sometimes reduced to the Necessity of feeding

on it themselves, and if the Rigour of the Season continues, they sometimes perish of hunger after they have eat it all up.

The Receptacle of Honey within the Body of the Bee, into which it takes it as it collects it from the Flowers, and from which it again disgorges it into the Cells of the Comb, has been a Subject of some Dispute among Authors. *Maraldi* took it to be a mere Bag closed at the lower End, and destined for no other Purpose but this receiving and disgorging of the Honey; but *Swammerdam*, on more accurate Examination, found it to be the Stomach of the Animal opening at its Bottom into a second Stomach, as in many other Creatures, and thence sending the Food down into the Intestines; so that if the Honey Juice remains long in it, some of it is doubtless digested and carried off and only a Part disgorged into the Combs. The Trunk, though imagined by many to be an Organ of Suction, and to draw up the Honey Juice immediately into the Body, neither executes any Part of that Office, nor has any Communication with the Stomach. All that it serves for is, to retain the Juice till there is a moderate Quantity of it, that the Creature may not be obliged to deliver every Particle of it separate to its proper Place. When this Trunk is loaded with the Honey Juice, the Creature deposits it thence by a Drop at a Time on the Tongue, which immediately drawing into the Mouth, delivers it to the *Œsophagus*, and it thence is conveyed down into this first Stomach, which is the white Bag we see Children, when they have killed Bees, searching after for the Sake of the Honey.

The Quantity of Honey this Stomach is capable of containing when distended to the utmost is but very small, yet so very little is the Portion of it supplied by one Flower that the Bee is forced to visit and drain several one after another before she can fill it. People who have written on these Subjects, tell us, that the Bee always collects all the Honey she takes into her Stomach at one Time from one Kind of Flower, and that if she has taken in the first Parcel of it from a Violet, she will settle on no Flower but Violets afterwards, till she has been to the Hive; this is an Opinion as old as *Aristotle*, but it is not at all the more true for its Antiquity. Instinct, which instructs these Creatures how to act, would not instruct them idly: To what Purpose could it serve for one Bee to be careful only to take up the Honey of one Flower, when the next Moment another may bring in and deposit in the same Cell the Honey of another? No such Caution is used, one may see a Bee at Work in a Flower-Garden go into every Flower it finds there, and make up its Cargo out of the mixed Honey Juices of them all. It is true indeed that the different Plants the Honey is principally made from, will give it a peculiar and different Flavour; and the *Narbonne* Honey owes its peculiar Fragrance doubtless to the great Quantity of aromatic Herbs that cover the Fields there.

Swammerdam, though right in many things, has erred in telling us, that the Bee discharges its Honey into the Cells of the Comb through an Aperture at the End of the Trunk: It is not certain that there is any Aperture there, or if there were, it is very certain that there is no Passage from the Stomach to it. The Honey is indeed voided through the Mouth at which it was taken in. The Stomach of the Bee is surrounded with circular Fibres very strong,

strong, and continually in Motion; these compress it while full of Honey, and tho' while the Mouth is shut, they give it by that means a Tendency to go downwards, yet so soon as the Mouth is opened over the Cells, and the Head placed in a declining Posture, the natural Effect of their Motion is the throwing it up, and discharging it that Way. The Bees regularly fill the highest and most distant Cells first, and afterwards the other in their order, and there is great Regularity in depositing the Honey in them: A Crust is formed over the Quantity in the Cell from the first, and this thickens by Degrees. It preserves the Honey below, and the Bees that discharge their Quantities into the Cell, do not discharge them on the Top of this, but always make a Hole in it with their Legs, and into this they deposit what they bring; so that though ever so many Additions are made this Crust remains, and each Bee that has lodged any Honey under it, new moulds and forms it before he leaves it, filling up the Breach he had made in it.

The several Cells of the Combs in every Hive are differently filled with Honey, and that intended for different Purposes: Some of them are left open at the Top, except that this Crust of thicker Matter just described, is left over them to prevent Mischief from the Air and Accidents: Others, as soon as they are compleatly filled, are covered over with a Lid of Wax, the same with that of the Cell itself. These latter are destined for after Service; those which are left open are meant to be the Food of the Bees when they cannot go out during the Winter Season. Rainy and very windy Weather always keep them within the Hive, and in these Cases they feed on this Honey. It has been pretended indeed, that they do go out in stormy Weather, and that they poise their Bodies by taking up a small Stone between their Legs on this Occasion. But this is of the Number of the false Wonders related by the Ancients of Bees, and more carefully transmitted to us than any Part of their true History. They never stir out in the Time of a Storm, and if overtaken by one while out, they will be seen hastening home, and crouding about the Door of the Hive to get in, but never with any Stone about them as is pretended; nor if those approaching but yet at greater Distances be examined, will they be found to have any such thing. What gave Rise to the Story seems to have been, that the People who fancied they saw the Fact, mistook for the Bee, a Bee-Fly, a Creature with only two Wings and with no Sting, nor ever swarming or making Honey: This Creature, though perfectly unlike the Bee in its Nature and Qualities, yet resembles it in Form, and as it builds its Nest or Habitation with small Stones, it may have been often seen carrying such through the Air; and the Mistake of the Creature being seconded by another, of the Intent of what it was seen doing, seems to have been form'd this famous Story of the Bee.

Notwithstanding that Honey is known to be originally lodged in the Flowers of Plants, and might seem to be always ready for the Bee there in sufficient Plenty, it is necessary that several Circumstances concur, in order to its being fine and perfect in its Kind. Among these are a warm and serene State of the Air, during the Time in which the Bees are most of all employed in making it, and a good State of Health in the Bee, as also its being made at a Time when many fragrant Plants are in Flower, and in a Place where such grow not too far off.

Honey taken out of the new Combs early in the Summer is vastly preferable to that taken from the same Hive in Autumn. The Reason of this is, that the Bees, during the Time of their making the former, have been in a more healthy and vigorous State; and that there have been fragrant Flowers in greater Number and Perfection at that Season, than later in the Summer.

Honey, distill'd in *Balneum Mariæ*, yields from the Pound, first three Ounces of a limpid Phlegm, insipid to the Taste, but having the Smell of Honey; this Liquor, which is what Chemists call the Dew of Honey, though insipid to the Taste, contains a latent Acid, which manifests itself on Experiment. It turns Syrup of Violets red, and makes all the other Changes in Bodies that any other weak Acid may be expected to do; but it is of the Number of those which are too weak to ferment, either with the volatile or fix'd Alkalis. The Vessel being now remov'd out of the *Balneum Mariæ*, and placed in a Sand-heat, there arise next two Ounces of a yellowish and limpid Liquor, of an acrid Taste, of a strong Smell of Honey, and somewhat empyreumatic; this turns the Syrup of Violets red more easily than the former, and therefore is a stronger Acid, but neither does this ferment with Alkalis. On encreasing the Fire there arise white Clouds into the Head of the Vessel and the Receiver, which condense into a third Liquor of a reddish Colour, and empyreumatic Smell, and yet not disagreeable; there will be about an Ounce and a half of this, it is call'd Spirit of Honey: This is of an acrid and burning Taste, and is a much stronger Acid than either of the former, for it ferments with any fix'd Alkali; which is a Proof that the former Liquors, and other weak Acids of a like Kind, are not of a Nature different from other Liquors of the same Denomination; nor possess, as some pretend, some of the Qualities of Acids and not others; but barely, that there requires a certain Degree of Acidity to ferment with Alkalis which they have not. On encreasing the Fire yet more, Clouds arise again, and there is a fourth Liquor produced, this is about an Ounce in Quantity, and is of an orange Colour: It is of an acid Taste, but less acrid than the former Liquor, having evidently some Portion of Oil among it which softens it: It ferments with Alkalis however like the former, and in the same manner turns Syrup of Violets red. From a Pound of Honey put into a Cucurbit, which is the proper Vessel for carrying on this Part of the Distillation, there will now remain at the Bottom somewhat more than seven Ounces of a black and spongy Coal; this is to be taken out and put into a Retort, a strong Fire made under this Vessel will now raise from this seemingly dry Coal three Ounces and a half of an Orange colour'd or reddish brown Liquor, which stains the Hands on touching them; this is of an empyreumatic Smell, but with something fragrant and agreeable in it, and of a very acrid acid Taste; after this Liquor there comes over a small Quantity of thick Oil like Tar, this is also of an acrid Taste, which is owing to some of the Salts of the Honey being mix'd with it.

There is more than this trifling Quantity of Oil in the Honey, but it does not come over separate; all the other Liquors contain more or less of it, but it does not shew itself till after some Time standing, when it precipitates to the Sides and Bottom of the Bottles they are kept in.

The Matter remaining in the Retort, after this last Produce of the Honey, is about three Ounces and a half: It is a very light and spongy black Coal,

almost

It should never be boiled, as its finer & more subtle parts are in that process
dissipated —

almost insipid to the Taste, but seeming yet to contain a small Portion of Salt. This Coal placed on an open Fire for Calcination, in an unglaz'd earthen Vessel, readily takes Fire, and burns like a Piece of Charcoal: It does not however fall into Ashes, but remains a Coal or Cinder still after all the burning; this tastes much more saline than before: Thrown into any Acid it ferments in the manner of a common Alkali; and in fine, being lixiviated in the common Way, it yields about seven Grains of a fix'd alkaline Salt, no way different from that of any vegetable Substance, that yields a pure Alkali by Incineration. If the Coal produced by the last burning of the *Caput Mortuum* be powder'd, and a Knife touch'd with a Load-stone, or an artificial or natural Magnet, be drawn over it, a considerable Quantity of Particles will be attracted from the rest, and separated by adhering to the Knife or Magnet. These are true Iron; and it is remarkable, that all vegetable Ashes yield more or less of the same Metal, when sufficiently calcined.

Honey is an excellent Pectoral, and is detergent, aperient, and diuretic. It should always be clarify'd by melting it over the Fire, either alone, or with the Whites of Eggs, and taking off the Scum, before it is used in Medicine. The Chemists pretend to have made an acid Spirit from it, which is a Solvent for Gold, but we have only their own Assurance of it, no Body else ever having seen such a Liquor.



Artificial Productions from Animals

Used in M E D I C I N E.

Of these we have only two :

SPERMA CETI, and ICHTHYOCOLLA.

CHAPTER I.

SPERMA CETI.

THE *English* Name of this Drug seems no better than a Corruption of the *Latin* one, and that is so improper a one, that it were to be wished we had a better in both Languages. The Ignorance of the People who first used this Medicine, gave it a Name which seems to express its being the Semen of the Whale, but it is in Reality no more than a Preparation of the Oil, with which that Fish abounds.

Sperma Ceti is a fine bright, white, and semi-pellucid Substance; composed of a fine furfuraceous Substance, form'd into oblong Flakes, very light, soft, and unctuous to the Touch; inflammable, soluble in Oil, but not in watery Menstruums; of scarce any Smell when fresh and fine, and of a soft, agreeable, and unctuous Taste. The largest, firmest, and whitest Flakes of it are to be chosen. It is liable to become rancid, and yellowish in keeping, and the smaller Fragments contract this bad Quality sooner than the larger.

The first Knowledge the World seems to have had of *Sperma Ceti*, was the finding it swimming on the Surface of the Water in the *Northern* Seas : And we are not to wonder, that People who knew no more of its Origin than what they were inform'd of by those who found it so floating on the Sea, refer'd it to the mineral Class, supposed it to be a Bitumen form'd in the Bowels of the Earth, and thrown up from the Bottom of the Ocean, as was the Opinion of *Schroder*, and others of his Time. It was soon after discover'd however, that the Head of a peculiar Species of Whale afforded a fatty Substance, which when boil'd, and properly prepared, was analogous to this. And hence it was soon deduced, that the Masses of it first found were of the same Origin; that they had been formerly an oily Matter in this Fish, which getting loose on the perishing of the dead Carcass, or by any other Means had been wash'd and bleach'd by the Salt-Water, and the Sun, into the Form in which it was then found. The Opinion of its being the *Sperm* or Semen of the Whale was

was about as early as the first Discovery that it belonged to that Animal, and seems to have been form'd merely on Account of its Whiteness.

The Species of Whale, from the Head of which *Sperma Ceti* was first prepared, and to which it was long thought to be peculiar, is of the Number of those rang'd in a peculiar Genus by *Artedi*, under the Name of *Catadon*, from their having Teeth in the under Jaw: He has distinguished this Species by the Name of *Catadon fistula in Cervice*, the tooth'd Whale, with a Pipe or Opening for the Discharge of Water in its Neck.

Sibbald, who had accurately examined the several Species of Whales, calls it *Balæna major in inferiore tantum Maxilla dentata macro-cephala bipinnis*; *Clusius* and many of the earlier Writers have described it under the Name of *Cete*; and the *Dutch* call it, the Pot-Whale Fish, and Trumpe.

It grows to sixty Feet or more in Length, and measures near forty Feet round in the thickest Part. It has a very large Head, and the Teeth in the lower Jaw are no less than forty-two in number; they are disposed in two Series or Rows, and are each as thick as a Man's Thumb: It has no Fin upon the Back, and in its general Shape, and other Particulars, resembles the other Whales, having the Tail placed horizontally, or transversely to the Body, not vertically as in other Fish, and the Structure of the internal Parts wholly the same.

The *Sperma Ceti* of the Shops was first made from the Head of this Fish; the Oil obtained from its Brain, and the *Diploe* of the *Cranium*, furnishing all that we had of it; and hence the considerable Price it long kept at. It was some Time after found out however, that any Whale Oil would do as well as this, and the Price soon fell considerably upon this. At present it is made in *England* from Whale Oil of any Kind, the Settlings of our Oilmen's larger Vessels particularly, which are boiled with a Lixivium of *German Pot-Ash*, or what is call'd in the Shops *Pearl-Ashes*, till white and firm; and then, after several other Meltings, and a thorough Separation of what saline Particles might have got into the Matter, it is when cold cut out with Knives into the Flakes we see it in. The Process is easy, but it requires Care, and a nice Inspection towards the End: If not sufficiently boiled it is apt to turn yellow, and grow rancid very soon.

Sperma Ceti is therefore Oil of the animal Kind, render'd very sweet and fit for internal Use: Accordingly its Virtues are those of an Emollient, and Pectoral, it is excellent in Coughs, and other Disorders of the Breast; and a very good Ingredient in external Applications, such as Liniments, and the like. It very readily dissolves in Oil, or any fatty Substance, for the latter Purposes; and for the former, it blends with the Yolk of an Egg, and after that Mixture, with any aqueous Fluid, and makes a pleasant kind of Emulsion.

CHAPTER II.

ICHTHYOCOLLA.

Ifinglafs.

WE have a Custom of calling two very different Bodies by the same common Name of *Ifinglafs* in the Shops: The one a mineral Production, a kind of Talk already described in the first Part of this Work under its proper Name: The other a Preparation from the animal Kingdom, which is the Subject of this Chapter.

The *Ichthyocolla*, or *Ifinglafs* of the animal Kingdom, is a tough and firm Substance, of a whitish Colour, and in some Degree transparent; it is light, moderately hard, very flexible, and of scarce any Smell, and very little Taste: Taken into the Mouth however, it by Degrees melts in it; and boil'd in Water, or Milk, it dissolves and thickens the Fluid into a kind of Jelly; upon the whole, it in many things resembles Glue, but that it is cleaner and sweeter. We usually receive it in twisted Pieces, of an oblong and rounded Figure, and bent into the Shape of a Staple, or Horse-shoe; this our Druggists usually beat and pull to Pieces, and sell it in thin Shreds like Skins, which easily dissolve.

Beside this Kind of round *Ifinglafs*, we meet with some in small, thin, square Cakes, white and very transparent, these are the finest of all; but there is also a very coarse and bad sort, inferior to all the rest, sometimes brought in this square Form. *Ifinglafs*, of whatever Shape it be, is to be chosen clean, whitish, and pellucid; the foul, spotted, and brown, is always to be rejected.

The Fish from which *Ifinglafs* is prepared is one of the cartilaginous Kind: It is rank'd by *Artedi* among the *Chondropterygii*, and described by him very judiciously as a Species of Sturgeon, under the Name of *Accipensor Tuberculis carens*, the Sturgeon that has no Tubercles. *Pliny* has mentioned it under the Name of the *Mario*, and *Ichthyocolla*; and other Authors under those of *Huso*, *Exos*, and *Ichthyocolla*. *Ray*, and others, affirm, that the *Ifinglafs* of the Shops is prepared from several different Fish of the cartilaginous Kind, the *Huso*, the *Ichthyocolla*, and the *Antacæus Borysthenis*; but the Truth is, there is only one Fish which it is made from, but that Fish is call'd by all these different Names. The *Huso Germanorum* of *Gesner*, *Willughby*, and *Ray*, which is the *Ichthyocolla* of *Rondeletius*, and the *Capso*, and *Colepesec* of the *Italians*, the *Exos*, and *Ichthyocolla* of the same Authors; the *Ichthyocolla Piscis* of *Johnson*, *Willughby*, *Ray*, and *Bellonius*; and the *Antacæus* of *Eliau*, *Strabo*, and the Moderns, will by any Body, who will be at the Pains of comparing the Descriptions in the several Authors, be found to be in Reality one and the same Fish, described under different Circumstances.

It grows to eighteen, twenty, or twenty-five Feet in Length, and in its general Figure greatly resembles the Sturgeon. Its Snout is very long, and is ornamented with several Beards, or oblong and narrow Excrescences; there are usually four, or else eight of them: The Body is roundish, but somewhat flattened, very long in proportion to its Thickness, and much thicker toward the Head than near the Tail: It has only one Fin on the Back, and that is near the Tail;

Tail; it has two at the Breast, two others at the Belly, and one below the Aperture of the *Anus*: It has no Scales: Its Back is blackish, and its Belly yellowish: It is frequent in the *Danube*, the *Borysthenes*, the *Volga*, and many other of the larger Rivers of *Europe*.

The Method of preparing the *Ichthyocolla* from it is this: They cut off all the Fins close to the Flesh, and take out the Bladder, Stomach, and Intestines; they wash these very clean, then cut them in Pieces, and throwing them into a large Quantity of Water they let them steep four and twenty Hours; and after this they kindle a Fire under the Vessel, and keep the Liquor just boiling till the greater Part of the Matters are dissolved; they then stir the whole briskly about, then strain it through Flannels, and set the Liquor by to cool.

When cold there is a large Quantity of Fat usually form'd upon it, which is carefully skim'd off, and the clear Liquor is pour'd off, from the grosser Parts which subside, is put over the Fire again, and gently evaporated and skim'd afresh all the Time, till by Trials they find, that on letting a Spoonful of it cool it will harden into the Consistence of Glew. Great Care is taken to keep the Fire very gentle to prevent burning, toward the End of the Evaporation: They then pour it out upon a large smooth wooden Table, and as it cools form it into the Masses we meet with it in, by cutting and rolling it up.

The greatest Quantity of Isinglass is made in *Russia*: We have it principally from *Holland*, the *Dutch* contracting for most of it before it is made.

It is an excellent Agglutinant and Strengthenner, and is often prescribed in Jellies, and Broths, but rarely enters any Compositions of the regular medicinal Form. The Wine-Coopers use a much greater Quantity of it than the Apothecaries: It is the most efficacious, as well as the most safe and innocent of all the Ingredients they use for clearing their Wines.

F I N I S.



T H E I N D E X.

A.

A B R O T A N U M

Abſinthium	400	Aniſum Stellatum	486
Abſinthium Romanum	350,	Anime	730
Acajou	353	Antihecticum Poterii	46
Achates	491	Antimony	63
Acorus	275	Antimony, Preparations of	68
Acorus Adulterinus	570	Aparine	387
Adamas	571	Aqua Fortis	99
Adiantum	299	Aqua Regia	100
Ærugo	408	Aqua Sappharina	2
Æs uſtum	32	Arabian Stæchas	422
Æthops Mineralis	32	Argentum	34
Ætites	60	Argentum vivum	53
Agaric — <i>Quercinus</i> —	278	Argilla Lemnia	222
Agate	337	Aristolochia	583
Agnus Caſtus, Berries of	275	Armenian Stone	2389
Alabaſter	506	Arſenic	73
Alkanet	267	Artemiſia	342
Allium	598	Aſarabacca	639
All Spice	659	Aſarum	639
Almonds	466	Aſbeſtus	252
Aloes	479	Aſparagi Radix	647
Aloes Wood	772	Aſſaſœtida	753
Althæa Root	686	Aſter Samius	227
Alum	649	Aſteria	299
Alum, Preparations of	107	Aſteria	310
Amber	113	Atriplex	347
Amber, Preparations of	155	Avellana Purgatrix	539
Ambergreafe	158	Auricula Judæ	336
Amethyſt	165	Auripigmentum	159
Amianthus	296	Aurum	47
Amomum verum	252	Aurum Muſivum	46
Ammoniac Salt	470	Aurum potabile	51
Ammoniacum	123		
Ampelites	759		
Amygdala	170		
Anacardium	479		
Anagallis	490		
Anchuſa	406		
Angelica Root	598		
Aniſe Seed	603. 609		
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B.

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Baccæ Alkekengi	507
Baccæ Juniperi	486
Baccæ Myrti	488
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Balauſtines	407
5 Y	Balm

I N D E X.

Balm of Gilead	699		
Balsamum Capiui	704		
Balsamum Judaicum	699		
Balsam of Peru	701		
Balsamum Peruvianum	701		
Balsamum Tolutanum	703		
Barbadoes Tar	175		
Bardanæ Radix	657		
Baum	360		
Bayberries	488		
Bdellium	765		
Bean purging	538		
Becabunga	385		
Behen Radix	629		
Belemnites	304		
Ben Nut	492		
Bengal Bean	503		
Benjamin	716		
Benzoinum	716		
Beryl	293		
Betonica	372		
Betony	372		
Bezoar fossile	262		
Bezoars	849		
Bezoar Germanicum	859		
Birthworts	583		
Bishopsweed Seed	522		
Bismuth	77		
Bismuth, Flowers of	79		
Bismuth, Magistery of	79		
Bistorta	606		
Bitumen Judaicum	167		
Black Currants	512		
Blois, Bole of	193		
Bloodstone	9		
Bloodstone, green	272		
Bole Armenic, red	178		
Bolus Armena alba	2		
Bolus Armena flava	191		
Bolus Blesensis,	193		
Bolus Bohemica	200		
Bolus fusca	208		
Bolus pallide fusca	201		
Bolus rubra Gallica	180		
Bolus Toccaviensis	194		
Borage Flowers	432		
Borax	113		
Brimstone	148		
Brooklime	385		
Broom	396		
Brown Bole	206		
Bryonia	661		
Buckbeans	395		
Bufoites	305		
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Burdock Root	657		
Burnt Lead	22		
Butchers Broom Root	645		
Butterburr Root	658		
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		Cacao	474
		Cadmia	85
		Calamine	80
		Calamintha	348
		Calamus Aromaticus verus	412
		Calamus Aromaticus	570
		Calcareus Lapis	255
		Camphire	726
		Campechianum Lignum	686
		Canella Alba	669
		Cannel Coal	170
		Cantharides	822
		Capparis Cortex	678
		Capiui Balsam	704
		Caranna	733
		Caraway Seed	516
		Cardamoms	467
		Cardiaca	346
		Carduus Benedictus	355
		Carlina	634
		Carnelian	274
		Carthamus Seed	533
		Caryophyllus	455
		Cascarilla	674
		Cashew Nut	491
		Cassia Fistula	453
		Cassia Caryophyllata	673
		Cassia lignea	667
		Cassumunar	568
		Castor	868
		Catechu	784
		Catmint	344
		Cats Eye	299
		Centaurium minus	354
		Cepa	379
		Cera	877
		Ceratitis Lapis	267
		Cerus	22
		Cerussa	22
		Chaicitis	140
		Chalk	232
		Chamædrys	369
		Chamæpitys	370
		Chelæ Cancrorum	843
		Chian Earth	228
		China Root	612
		Chocolate Nut	474
		Cimolia Alba	219
		Cimolia Alba antiquorum	224
		Cimolia, purpurascens	217
		Cimolia purpurascens	236
		Cineres Russici	891
		Cinnabar native	56
		Cinnabar artificial	60
		Cinnamon	663
		Citrull Seeds	531
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Clary	410	Dracontium	365
Cleavers	387	Dragons	365
Clove	455	Dragon's Blood	724
Clove Julyflowers	431 459	Dwarf Elder	394
Cobalt	70		
Cocculus Indicus	504	E.	
Cochineal	815		
Cochlearea	384	Eagle Stone	278
Codaga Pali	676	Earths	178
Coffee	477	Earth of Sinope	238
Collyrium Samium	229	Ebulus	394
Colocynth	449	Ebur	838
Colubrinum Lignum	692	Elaterium	793
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Copal. <i>Con hayena.</i> 609	732	Elemi	721
Copper	24	Eleutherii Cortex	674
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Coral red	331	Emerald	290
Coral black	334	Emery	10
Coral white	334	English Talk	251
Coralline	334	Ens Veneris Boyle's	34
Coriander Seed	518	Entalium	844
Cornu Cervi	831	Entrochus	309
Cornu Unicorni	841	Enula	617
Costus	623	Eryngo Root	621
Crabs Claws	843	Erysimum,	364
Cranesbill	407	Esula	640
Creta	232	Euphorbium	766
Creta argentaria	240		
Creta Seleneusiaca	230	F.	
Crocus	435		
Crystal	279	Faba Bengalenfis	503
Cubebs	472	Faba St. Ignatii	506
Cucumber Seed	530	Fennel Seed	519
Cummin Seed	517	Fern Root	650
Curcuma	593	Ferrum	5
Cuprum	24	Feverfew	344
Currants black	512	Ficus	483
Cuscuta	392	Figs	483
Cuttlefish Bone	837	Filicis Radix	650
Cyper	601	Flies, <i>Spanish</i>	822
		Flores Zinchi	84
		Flores Aurantii	425
		Flores Æris	32
		Flores Boragmis	432
		Flores Buglossa	433
		Flores Caryophylli	431
		Flores Chamæmeli	442
		Flores Hyperici	445
		Flores Lamii	447
		Flores Lavandulæ	423
		Flores Lillii Convallii	429
		Flores Paralyfis	444
		Flores Persicæ	441
		Flores Rorismarini	426
		Flores Rosarum	438
		Flores Sambuci	443
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Dactyli	481		
Dates	481		
Daucus Seed	535		
Dentalium	844		
Diamond	299		
Diaphoreticum Joviale	46		
Dictamnus Creticum	418		
Dill Seed	521		
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Dock Root	656		
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Flores Tilizæ	428	Hepatica	398
Flores Violarum	440	Heps	510
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Fluor	282	Hermodyctyl	552
Fænugreek Seed	528	Hibernicus Lapis	257
Fraxinella	587	Hippocampus	823
<i>French</i> Bole, red	180	Hoarhound	362
<i>French</i> Bole, yellow	193	Honey	886
		Horminum	410
G.		Horsemint	359
		Hyacynth	286
Gagates	168	Hydrargyrum	53
Galactites	216	Hyppocistidis Succus	792
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Galls	695	J.	
Galbanum	751		
Gamboge	776	Jalap	549
Garlick	659	Jaspis	276
Gentian	575	Ichthyocolla	824
Genista	396	Jet	168
Geranium	407	Jews Ears	336
<i>German</i> Bezoar	859	Jews Stone	302
Germander	369	Ignatius's Bean	506
Ginger	569	Indian Leaf	419
Ginseng	589	Indian Berry	504
Glossopetra	307	Infernal Stone	39
Glycyrrhiza	620	Ipecacuanha	562
Goats Blood	873	Iris Root	616
Goats Rue	397	<i>Iris</i> Slate	257
Gold	47	Iron	5
Gourd Seed	530	Iron, Preparations of	15
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Grana Tiglia	540	Isinglass	894
Graminis Radix	646	Juniper Berries	486
Granatus	285		
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Ground Ivy	361		
Ground Liverwort	399	Kermes	809
Ground Pine	370		
Guaiacum	679	L.	
Gum Arabic	740		
Gum Lac	723	Labdanum	735
Gum Tragacantha	743	Lacca	723
Gypsum	254	Lapathi Radix	656
		Lapis Armenus	238
H.		Lapis Bezoardicus fossilis	262
		Lapis Calaminaris	80
Hæmatites	9	Lapis Calcarius	255
Hartwort Seed	524	Lapis Ceratites	266
Harts-Horn	831	Lapis Divinus	271
Hederæ Terrestris	36	Lapis Galactites	215
Hedge Hyssop	388	Lapis Hæmatites	9
Hedge Mustard	364	Lapis Hibernicus	257
Heliotropium	272	Lapis Infernalis	39
Hellebore, black	558	Lapis Judaicus	302
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Hempseed	534	Lapis Melitites	214
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Lapis Specularis	247	Marum	375
Lapis Thyites	213	Marshmallow Root	643
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Lavendula	423	Matricaria	344
Lavender Flowers	423	Melanteria	144
Laureola	390	Mechoacan	556
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Lemnian Earth, red	182	Melilot	382
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Lentisk Wood	694	Melissa	360
Lichen Terrestris	399	Melon Seed	532
Lillii Albi Radix	653	Mentastrum	359
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Liquid Ambar	711	Meum	637
Liquid Storax	712	Mezereon	391
Liquorice	620	Millepedes	825
Liquorice Juice	788	Minium	21
Little Centaury	354	Mint	356
Litharge	21	Misy	141
Lithargyrus	21	Morochthus	217
Liverwort	398	Morus	512
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Logwood	656	Motherwort	346
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Lujula	380	Mulberry	512
		Mummy	875
		Muria	100
		Musk	861
		Mustard Seed	527
		Myrobalans	500
		Myrrh	757
		Myrtle Berries	488
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		Naphtha	172
		Nardus	577
		Nasturtium Aquaticum	386
		Natrum	120
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Nux Pistachia	495	Plumbum	17
Nux Vomica	504	Plumbum ustum	22
Nymphææ Radix	652	Pnigitis Dioscoridis	206
		Pnigitis Galeni	211
O.		Polygonoti Radix	654
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Oleum Terræ	175	Pumex	265
Olibanum	720	Purging Flax	389
Onion	379	Pyrethrum	604
Onix	277	Pyrites	145
Opal	298		
Ophites	268	Q.	
Opoponax	763	Quicksilver	53
Opium	779		
Orach	347	R.	
Origanum	403		
Orpiment	159	Raisins	484
Os de Corde Cervi	838	Rattlesnake Root	630
Os Sepiæ	837	Red French Bole	180
Osteocolla	258	Reddle	234
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		Rhabarbarum	546
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Pæoniæ Radix	594	Rhodium Lignum	689
Parætonium	221	Rhubarb	546
Pareira brava	599	Ribesia nigra	512
Parietaria	378	Ricini	537
Parsley Root	644	Roman Wormwood	353
Parsley Seed	520	Rosemary Flowers	426
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Pennyroyal	341	Rufci Radix	645
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Pimenta	466	Sagapenum	761
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Salts Metalline	129	Seneca Root	630
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Samian Earth white	226	Silver Chalk	242
Sandarach	163	Sima Rouba	675
Sandarach Refin	737	Snakewood	692
Sanguis Draconis	724	Smallage Seed	523
Sanguis Hirci	873	Smalt	75
Santala	683	Smiris	10
Saponaria Terra	236	Soap Earth	217
Sapphire	287	Solomons Seal Root	654
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Sarcocolla	764	Southernwood	400
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Sassafras	681	Spar	282
Savin	341	Specularis Lapis	247
Saunders	683	Sperma Ceti	892
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Scammony	769	Spikenard	577
Schænanth	413	Spiritus Nitri	97
Scilla	648	Spodium	89
Scincus	830	Spongia	335
Scordium	368	Spunge	335
Scrophulariæ Radix	640	Spurge Laurell	390
Scurvygrafs	384	Squammæ Æris	34
Sea Horfe	823	Squill	648
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Semen Ammeos	522	Stavefeacre	543
Semen Anethi	521	Steatites	217
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Semen Cannabis	534	Styrax liquida	712
Semen Carthami	533	Succinum	155
Semen Citrulli	531	Succus Acaciæ	790
Semen Carui	516	Succus Glycyrrhizæ	788
Semen Coriandri	518	Succus Hypocistidis	792
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Semen Melonis	532	Tachamahacca	734
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Tea	420	Valerian	581
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Terra Caia	228	Venetian Talk	246
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Terra Eretria	207	Viper	826
Terra Goltbergenfis	204	Virginian Snake Root	611
Terra Lemnia Alba	203	Vitriols	129
Terra Noceriana	202	Vitriol blue	138
Terra Lemnia Flava	195	Vitriol green	129
Terra Lemnia Rubra	182	Vitriol white	136
Terra Lignicensis Lutea	196	Unguis Odoratus	846
Terra Livonica Lutea	199	Ungula Alces	831
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Terra Melia	243	Unicornu fossile	260
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Terra Seleneufiaca	230	Waters Sulphureous	327
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Terra Sinopica	238	Water Crefs	386
Terra Strigonienfis	184	Water Lilly Root	652
Terra Turcica	188	Wax	877
Thyme	367	White Lilly Root	653
Thyites	213	Wild Marjoram	403
Tin	40	Winters Bark	668
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Tinctura Auri	51	Woodlice	825
Tobaccopipe Clay	219	Wood Sorrel	380
Tolu Balsam	703	Wormwood	350
Tooth Shell	844	Worm Seeds	528
Topaz	294		
Tormentilla	607	Z.	
Tragacanth	743		
Treacle Mustard Seed	525	Zaffer	76
Trifolium palustre	395	Zedoary	565
Tripela	243	Zerumbeth	567
Trochites	309	Zibethum	864
Turbith Root	554	Zinchi Flores	84
Turcheſia	29	Zink	79
Turmeric	593	Zinziber	569
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